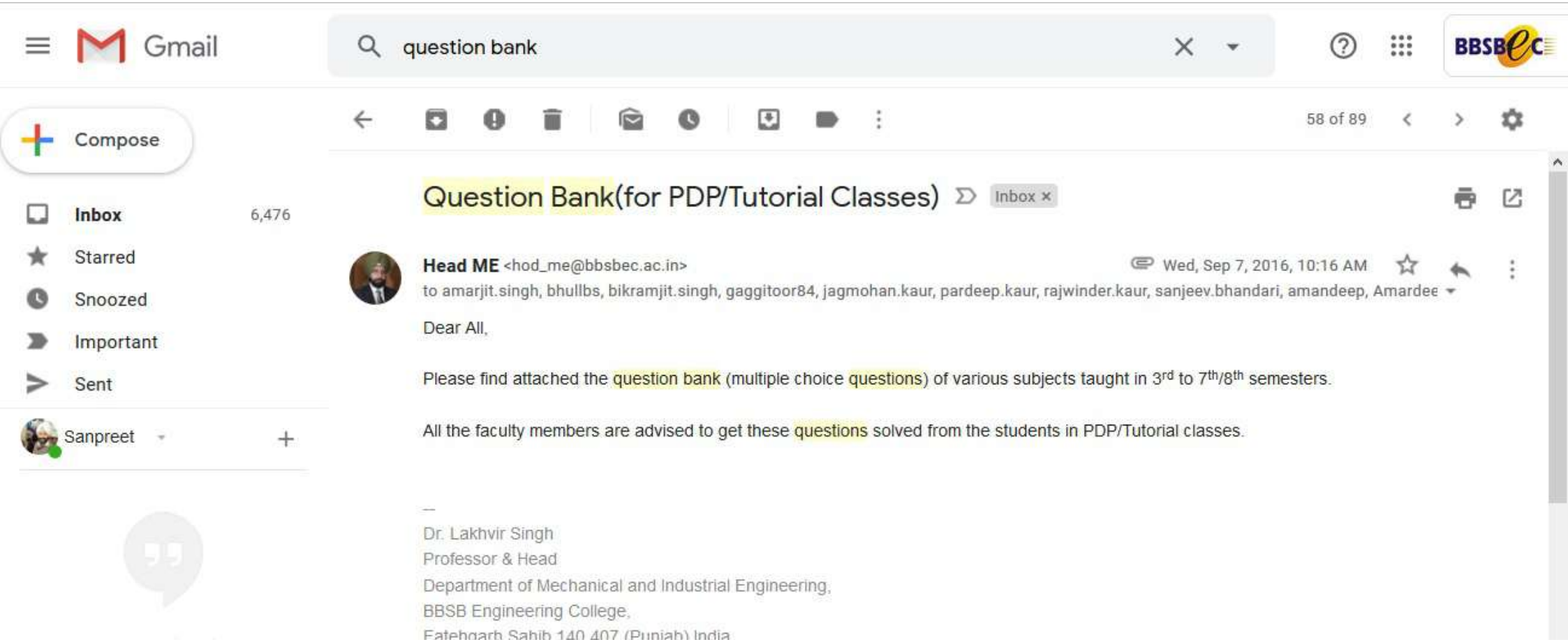
QUESTION BANK FOR THE PREPARATION OF ENGINEERING COMPETITIVE EXAMINATIONS

MECHANICAL ENGINEERING DEPARTMENT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Question Bank(for PDP/Tutorial Classes)
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Head ME <hod_me@bbsbec.ac.in>
Wed, Sep 7, 2016, 10:16 AM
to amarjit.singh, bhullbs, bikramjit.singh, gaggitoor84, jagmohan.kaur, pardeep.kaur, rajwinder.kaur, sanjeev.bhandari, amandeep, Amardee
Dear All,
Please find attached the question bank (multiple choice questions) of various subjects taught in 3rd to 7th/8th semesters.
All the faculty members are advised to get these questions solved from the students in PDP/Tutorial classes.
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QUESTION BANK

Subject: Applied Thermo-I

Q 1. **The operation of forcing additional air under pressure in the engine cylinder is known as**	
a) Scavenging	b) Turbulence
c) Supercharging	d) Pre-ignition
Correct answer: C	
Q 2. **The ignition quality of petrol is expressed by**	
a) Cetane number	b) Octane number
c) Calorific value	d) All of these
Correct answer: Option B	
Q 3. **The probability of knocking in diesel engines is increased by**	
a) High self ignition temperature	b) Low volatility
c) Higher viscosity	d) All of these
Correct answer: Option D	
Q 4. **In compression ignition engines, swirl denotes a**	
a) Haphazard motion of the gases in the chamber	b) Rotary motion of the gases in the chamber
c) Radial motion of the gases in the chamber	d) None of the above
Correct answer: Option B	
Q 5. **In a four stroke cycle diesel engine, the exhaust valve**	
a) Opens at 30° before bottom dead centre and closes at 10° after top dead centre	b) Opens at 30° after bottom dead centre and closes at 10° before top dead centre
c) Opens at bottom dead centre and closes at top dead centre	d) May open and close anywhere
Correct answer: Option A	
Q 6. The combustion analysis in which the fuel is separated into arbitrary constituents such as moisture, volatile matter, fixed carbon and ash etc. is called as	
a) Ultimate analysis	b) Proximate analysis
c) Stoichiometric analysis	d) None of these
Correct answer: B	
Q 7. A combustion has all the oxygen supplied with air to the reactants being used and no free oxygen appears in products. Such air supplied is called as	
a) Stoichiometric air	b) Excess air
c) Dry air	d) None of these

QUESTION BANK

Subject: Applied Thermo-I

Correct answer: A	
Q 8. Composition of dry air on mass basis is	
a) 0.232 kg O2and 0.768 kg N2	b) 0.21 kg O2and 0.79 kg N2
c) 1 kg O2and 3.31 kg N	d) None of these
Correct answer: **B**	
Q 9. Critical point pressure and temperature for water are	
a) 22.12 MPa and 374.15°C	b) 0.23 MPa and –268°C
c) 18.2 MPa and 899°C	d) None of these
Correct answer: A	
Q 10. On T-s diagram the state change during transformation of 0°C water to 0°C steam atatmospheric pressure due to heat addition can be shown by	
a) Slant line	b) Vertical line
c) Horizontal line	d) None of these
Correct answer: C	
Q 11. On T-s diagram the state change during transformation of 0°C water to 100°C water at atmospheric pressure due to heat addition can be shown by	
a) Line with positive slope	b) Vertical line
c) Horizontal line	d)None of These
Correct answer: A	
Q 12. The steam is superheated in boiler at	
a) Isothermal process	b) Isobaric process
c) Isochoric process	d) None of these
Correct answer: B	
Q13. Lancashire boiler has how many number of fire tubes in it?	
a) Three	b) Four
c) One	d)two
Correct answer: C	
Q 14. Cornish boiler has how many flue tubes in it	
a) Three	b) Four
c) One	d)two
Correct answer: A	
Q 15. Which of the following is/are super critical boiler?	
a)Cochran boiler	b) Locomotive boiler
c) Benson boiler	d) Lancashire boiler
Correct answer: C	

QUESTION BANK

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Q 16. Which of the following is/are fire tube boiler(s)?	
a) Velox boiler	b) Nestler boiler
c) Locomotive boilers	d) All of these
Correct answer:D	
Q 17. Water level indicator has how many vertical tubes?	
a)One	b)Two
c)Three	d)Four
Correct answer: B	
Q 18. Fusible plug has plug made of copper and the body is made of	
a) Gun metal	b) Aluminium
c) Iron	d) Bronze
Correct answer:A	
Q 19. Feed pump in boilers may be of	
a) reciprocating pump type	b) centrifugal pump type
c) injector type	d) All of these
Correct answer:D	
Q 20. The power requirement in forced draught and induced draught shall be related as,	
a)*P*induced = *P*forced	b)*P*induced<*P*forced
c)*P*induced>*P*forced	d) None of these
Correct answer:*C*	
Q 21. State which of the following is/are incorrect?	
a) Combustion is better in forced draught	b) Fan size of induced draught is larger than forced draught fan
c) Maintenance in F.D. fan is easy as compared to ID fan	d) None of these
Correct answer:D	
Q 22. Boiler efficiency is given by the the ratio of heat used in steam generation and	
a) Heat recovered using artificial draught	b) Heat lost due to use of natural draught
c) Heat available due to fuel burning	d) None of these
Correct answer: C	
Q 23. Mean temperature of heat addition gets increased and shows increase in cycle	

thermal efficiency. This cycle is called,	
a) Regenerative cycle	b) Reheat cycle
c) Carnot cycle	d) None of these
Correct answer:A	
Q 24. The efficiency of Carnot cycle may be equal to which of the following cycle running between same temperature limits,	
a)Rankine cycle	b)Stirling cycle
c)Brayton cyle	d) Otto cycle
Correct answer: B	
Q 25. Which of the following is not vapour power cycle?	
a)Rankine Cycle	b)Carnot Vapour power cycle
c) Otto cycle	d) None of these
Correct answer: C	
Q 26. The amount of energy added by heat transfer to the cycle to produce unit of net work output is called	
a)Heat Rate	b)Work Ratio
c)Back Work Ratio	d)Thermal efficiency
Correct answer: A	
Q 27. Thermodynamic processes constituting a Rankine cycle are isobaric heat addition, adiabatic expansion, isobaric heat release and	
a) Adiabatic pumping	b) Isothermal pumping
c)Polytropic pumping	d) None of these
Correct answer:A	
Q 28. Rankine cycle efficiency can be improved by	
a) Reduced heat addition in boiler	b) Increasing expansion work
c) Reduced feed pump work	d) All of these
Correct answer: D	
Q 29. Carnot vapour power cycle comprises of following processes.	
a) Two reversible isothermals and two reversible adiabatic processes	b) Two isothermals and two adiabatic processes
c) Two isothermals and two isentropic processes	d) Two isobarics and two adiabatic processes
Correct answer: B	

QUESTION BANK

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Q 30. Throttling process can be shown on Mollier diagram by,	
a) Vertical line	b) Horizontal line
c) Inclined line	d) None of these
Correct answer: B	
Q 31. For a reversible isothermal and isochoric process the Helmholtz free energy,	
a)Increases	b)Decreases
c) Remains Constant	d)Nothing can be said
Correct answer: C	
Q 32. Thermodynamic processes constituting a Rankine cycle are isobaric heat addition, adiabatic expansion, isobaric heat release and ….	
a) Adiabatic pumping	b) Isothermal pumping
c) Polytrophic pumping	d) None of these
Correct answer:A	
Q 33.Throttling process can be shown on Mollier diagram by, (a) (b (c) (d)	
a) Vertical line	b) Horizontal line
c) Inclined line	d) None of these
Correct answer:B	
Q 34. The critical pressure ratio for air flowing through nozzle shall be	
a) 0.528	b) 0.545
c) 0.577	d) none of these
Correct answer: A	
Q 35. When the back pressure of nozzle is below the designed value of pressure at exit of nozzle then the nozzle is called	
a) Inder-expanding nozzle	b)) Over-expanding nozzle
c) Designed operation nozzle	d) None of these
Correct answer: A	
Q 36. When the back pressure of a nozzle is equal to critical pressure then such operating state of nozzle is called	
a) Under-expanding nozzle	b) Over-expanding nozzle
c) Choked operation of nozzle	d) None of these
Correct answer: A	
Q 37. Phenomenon of super saturation, when occurring in nozzle causes,	
a) Increase in discharge	b) Reduced velocity at exit

c) Increase in dryness fraction and entropy	d) All of these
Correct answer:D	
Q 38. The ratio of saturation pressure corresponding to the temperatures of steam states in stable equilibrium and metastable equilibrium during steam flow through nozzle is called	
a) Degree of supersaturation	b)Degree of undercooling
c) Critical pressure ratio	d) None of these
Correct answer:A	
Q 39. For a subsonic flow the increase in velocity from inlet to exit may be obtained from a duct of	
a) Diverging cross-sectional area type	b) Diverging-converging cross-sectional area type
c) Converging cross sectional area type	d) None of these
Correct answer:A	
Q 40. For supersonic flow the increase in velocity from inlet to exit may be obtained from a duct of	
a) Diverging cross-sectional area type	b) Converging-diverging cross-sectional area type
c) Converging cross-sectional area type	d)) None of these
Correct answer:A	
Q 41. The difference between the saturation temperature corresponding to the steam states in stable equilibrium and metastable equilibrium during steam flow through nozzle is	
a) Degree of supersaturation	b) Degree of undercooling
c) Critical temperature difference	d) None of these
Correct answer:B	
Q 42. In a steam turbine if the leakage along the mating surface of shaft and casing is reduced by using the principle of steam throttling then the type of sealing arrangement may be	
a)Carbon rings	b)) Packings
c)Labyrinth glands	d)None of these
Correct answer:C	
Q 43. Which of the following is not a part of impulse steam turbine?	
a)Nozzle	b)Symmetrical moving blades ring
c)) Aerofoil type blades	d)None of these
Correct answer:C	

QUESTION BANK

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Q 44. The ratio of blade velocity to steam velocity remains constant in which type of compounding of impulse steam turbines	
a)Pressure compounding	b)Velocity compounding
c)Pressure-Velocity compounding	d)None of these
Correct answer:A	
Q 45. In an impulse turbine the absolute angle at inlet should be selected depending upon	
a)Thrust requirement	b)) Maintaining flow across the blade row
c)Both (a) and (b)	d)None of these
Correct answer:C	
Q 46. The ratio of work done to the energy supplied to rotor in a turbine stage is called,	
a)) Blading efficiency	b)Stage efficiency
c)) Nozzle efficiency	d)None of these
Correct answer:A	
Q 47. The ratio of rate of work done and energy supplied to the stage in a turbine is called	
a)Blading efficiency	b)Stage efficiency
c)Nozzle efficiency	d)None of these
Correct answer:B	
Q 48. Steam turbines having the complete nozzle coverage of blades are called,	
a)Full admission turbine	b)Partial admission turbine
c)Reaction turbines	d)) None of these
Correct answer:A	
Q 49. The ratio of sum of actual output of stages and the available energy in turbine is called	
a)Reheat factor	b)Stage efficiency
c)) Internal efficiency	d)None of these
Correct answer:A	
Q 50. Use of condenser in a steam power plant offers advantages such as	
a)It permits the recirculation of condensate	b)It allows for lower back pressure
c)It increases the turbine output	d) All of these
Correct answer:D	
Q 51. Radial flow turbines are also called as	
a)Rateau turbine	b)Ljungstrom turbine
c)) Curtis turbine	d)None of these
Correct answer:B	

QUESTION BANK

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Q 52. Condenser generally operates at	
a)Sub-atmospheric pressure	b)Atmospheric pressure
c)Above atmospheric pressure	d)None of these
Correct answer :A	
Q 53. Which of the following can not be achieved by using condenser	
a)Removal of air and other non-condensable dissolved gases	b)) Reduced load on water treatment plant
c)) Availability of hotter feed water	d)None of these
Correct answer :D	
Q 54. The condenser in which there is direct contact between the steam and cooling fluid could be	
a)Surface condenser	b)Jet condenser
c)Evaporative condenser	d)None of these
Correct answer: B	
Q 55. A condenser is placed at low level such that the vacuum inside condenser draws cooling water into condenser from river. Such condenser may be	
a)Low level jet condenser	b)High level jet condenser
c)Surface condenser	d)None of these
Correct answer: A	
Q 56. A condenser is placed at a height more than that of water and water is to be injected into condenser using a pump and condensate flows out of condenser due to gravity. This condenser may be	
a) Low level jet condenser	b)High level condenser
c)Surface condenser	d)) None of these
Correct answer: B	
Q 57. While designing the condenser it is desired to have,	
a)Maximum heat transfer between two fluids	b)Effective air extraction
c)No air leakage	d)All of these
Correct answer: D	
Q 58. A surface condenser should preferably have,	
a)Uniform distribution of steam over cooling water tubes	b)Minimum pressure loss of steam
c)Minimum number of tubes	d)All of these

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Correct answer: D	
Q 59. Leakage of air into condenser causes,	
a)Reduction in work done per kg of steam due to increase in back pressure	b)Increased heat exchange between water and steam
c)) Increased efficiency of auxiliary devices	d)None of these
Correct answer: A	
Q 60. Air leakage into condenser could be identified by	
a)Drop in thermometer reading, after isolation of condenser from plant	b)Soap bubble test
c)Peppermint oil test	d)All of above
Correct answer :D	

QUESTION BANK

Subject: EMM

1) Which of the following is not a crystal defect	
a) Dislocations	b) Tilt Boundaries
c) Hexagonal closed packing	d) Stacking Fault
Correct answer:	C)
2) The atomic packing factor for FCC crystal is	
a) 0.52	b) 0.68
c) 0.74	d) 0.86
Correct answer:	C)
3) A screw dislocation lies:	
a) Perpendicular to Burger's vector	b) Parallel to Burger's vector
c) Inclined to Burger's vector	d) None of above
Correct answer:	b)
4) The crystal direction perpendicular to plane with Miller Indices [1 0 0] is	
a) [1 0 0]	b) [1 1 0]
c) [0 0 1]	d) [1 0 1]
Correct answer:	a)
5) Metals are:	
a) Ductile	b) Good conductor of heat
c) Good conductor of electricity	d) All of above
Correct answer:	d)
6) Total number of atoms in BCC crystal is	
a) 1	b) 2
c) 3	d) 4
Correct answer:	b)

QUESTION BANK

Subject: EMM

7) A proton is	
a) Positively charged	b) Negatively charged
c) Neutral	d) None of above
Correct answer:	a)
8) Crystal structure of a material is, generally, examined by	
a) Naked eyes	b) X-ray Techniques
c) Optical microscope	d) Metallurgical microscope
Correct answer:	b)
9) A material is said to be allotropic, if it has	
a) fixed structure at all temperatures	b) atoms distributed in random pattern
c) any one of the above	d) different crystal structures at different temperatures
Correct answer:	d)
10) Schottky-defect in ceramic material is	
a) Interstitial impurity	b) Vacancy- interstitial pair of cations
c) Pair of nearby cation and anion vacancies	d) Substitutional impurity
Correct answer:	c)
11) Following is not the 2-dimensional imperfection	
a) Twin boundary	b) Dislocation
c) Tilt boundary	d) Grain boundary
Correct answer:	b)
12) Diffusion can occur in _____ materials.	
a) Solid	b) Liquid
c) Gaseous	d) All
Correct answer:	d)
13) The following mechanism contributes very little the diffusivity	

QUESTION BANK

Subject: EMM

a) Vacancy	b) Interstitial
c) Substitutional	d) Self-interstitial
Correct answer:	d)
14) Which one of the following is not basic component of Materials Science?	
a) Cost	b) Properties
c) Structure	d) Performance
Correct answer:	a)
15) Nucleus of an atom contains	
a) Electrons	b) Electrons and Protons
c) Protons and Neutrons	d) Electrons, Protons and Neutrons
Correct answer:	c)
16) Which of the following is incorrect	
a) Electrons and Protons have same charge	b) Protons and Neutrons have same mass
c) Neutrons are electrically neutral	d) Neutrons lie outside the nucleus
Correct answer:	d)
17) Repeatable entity of a crystal structure is known as	
a) Crystal	b) Lattice
c) Unit Cell	d) Miller Indiaces
Correct answer:	c)
18) Miller indices for Octahedral plane in cubic crystal	
a) [1 0 0]	b) [1 0 1]
c) [1 1 1]	d) [1 1 0]
Correct answer:	c)
19) Conservative movement of dislocations is	
a) Slip	b) Climb

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c) Both slip and climb	d) None
Correct answer:	a)
20) Theoretical strength is about _____ times to average real strength of a material.	
a) 10	b) 100
c) 1000	d) 10000
Correct answer:	b)

Q 21. Gibbs phase rule for general system	
a) P+F=C-1	b) P+F=C+1
c) P+F=C-2	d))P+F=C+2
Correct answer:	**d**
Q 22. Following is wrong about a phase diagram	
a) It gives information on transformation rates.	b) Relative amount of different phases can be found under given equilibrium conditions
c) It indicates the temperature at which different phases start to melt.	d) Solid solubility limits are depicted by it
Correct answer:	**a**
Q 23. A solid phase results in a solid plus another solid phase up on cooling during _____ reaction.	
a)) Eutectoid	b) Peritectoid
c) Eutectic	d) Peritectic
Correct answer:	**a**
Q 24. A solid phase results in a solid plus another solid phase up on heating during	

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_____ reaction.	
a) Eutectoid	b)) Peritectoid
c)) Monotectoid	d)None
Correct answer:	**b**
Q 25. A liquid phase produces two solid phases during _____ reaction up on cooling	
a) Eutectic	b) Eutectoid
c) Peritectic	d) Peritectoid
Correct answer:	**a**
Q 26. Eutectic product in Fe-C system is called	
a) Pearlite	b) Bainite
c) Ledeburite	d) Spheroidite
Correct answer:	**c**
Q 27. Eutectoid product in Fe-C system is called	
a)) Pearlite	b) Bainite
c) Ledeburite	d) Spheroidite
Correct answer:	**a**
Q 28. Phases that exist on left side of an invariant reaction line are called	
a) (a) Pro-phase	b) Hypo-phase
c) Hyper-phase	d) None
Correct answer:	**a**
Q 29. In in Fe-C system what is the content of eutectoid steel	
a) 72%	b) 76%
c) 0.76%	d)

QUESTION BANK

Subject: EMM

	2.14%
Correct answer:	**c**
Q 30. Relative amounts of phases in a region can be deduced using	
a) Phase rule	b) Lever rule
c) Either	d) None
Correct answer:	**b**
Q 31. The boundary line between (liquid) and (liquid+solid) regions must be part of	
a) Solvus	b)) Solidus
c)) Liquidus	d) Tie-line
Correct answer:	**c**
Q 32. Alloys with carbon content upto 2.0 percent are called	
a) steels	b) cast irons
c) (c) duralium	d) stainless steel
Correct answer:	**a**
Q 33. ……. Is the softest structure that appear on the Fe-C equilibrium diagram	
a) Austentite	b) ledeburite
c) pearlite	d) ferrite
Correct answer:	**d**
Q 34. What is the name of structucture of austenite	
a) BCC	b)FCC
c) Hexagonal closed packed	d) simple cubic
Correct answer:	**b**
Q 35. When austenite is cooled at rate faster than the critical cooling rate, it transforms to	

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Subject: EMM

a) martensite	b) pearlite
c) bainite	d) cementite
Correct answer:	**a**
Q 36. . Bainite has the same morphology as	
a) austenite	b) a non lamellar morphology of ferrite and cementite
c) the coarsest morphology among all the products from austenite	d) none of these
Correct answer:	**b**
Q 37. . wt.% of carbon in mild steels	
a) <0.008	b) 0.008-0.3
c)) 03-0.8	d) 0.8-2.11
Correct answer:	**b**
Q 38. The temperature and carbon content at which eutectoid reaction occurs in Fe C equilibrium diagramare	
a) 723º C and 0.02 % C	b)723º C and 0.08 % C
c) 623º C and 0.02 % C	d) 623º C and 0.08 %
Correct answer:	**b**
Q 39. The eutectoid mixture of steel is	
a) a mixture of ferrite and cementite	b) a mixture of ferrite and austenite
c) mixture of austenite and cementite	d) called pearlite
Correct answer:	**d**
40 Phase formed of diffusion-less reaction:	

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Subject: EMM

(a) Pearlite	(b) Lower Bainite
(c) Upper bainite	(d) Martensite
Correct answer:	**d**

Q 41. The hardenability is not affected by	
a) air	b) chemical composition of steel
c) critical cooling rate	d) quenching medium and method of quenching
Correct answer:	a
Q 42. The slowest cooling rate is obtained when steel is quenched in	
a)air	b) brine
c) fused salt	d) Mixture of oil and water
Correct answer:	a
Q 43. The fastest cooling rate is achieved when steel is quenched in	
a) air	b) oil
c) water	d) brine
Correct answer:	d
Q 44. Which one of the following is not correct?	
a) Martensite has a BCC structure	b) Austenite has FCC structure
c) Martensite is a solid solution of carbon in BCC iron	d) The martensite which is formed during quenching is too brittle
Correct answer:	a
Q 45. Hardenability of steel is assessed by	
a) impact test	b) Jominy end-quench test
c) hardness test	d) non-destructive test
Correct answer:	b
Q 46. Annealing temperature is	

a) same as normalizing temperature	b) greater than normalizing temperature
c) less than normalizing temperature	d) sometimes greater and sometimes lesser than normalizing temperature
Correct answer:	c
Q 47. Heat treatment that requires heating a part below A1 temperature, i.e. between 550°C and 650° is called as	
a) hardening	b) normalizing
c) process annealing	d) full annealing
Correct answer:	c
Q 48. The hardness and tensile strength in austenitic stainless steel can be increased by	
a) hardening and cold working	b) normalising
c) full annealing	d) martempering
Correct answer:	a
Q 49. **The process of decomposing martensitic structure, by heating martensitic steel below its critical temperature is called as** _____	
a) Austenitizing	b) Quenching
c) Tempering	d) None of the above
Correct answer:	c
Q 50. **Which of the following factors increases hardenability of a metal?**	
a) Alloying elements	b) Fine grain size
c) Very high carbon content in steel	d) All of the above
Correct answer:	a
Q 51. Which carburising method has high production rate?	
a) Pack carburising	b) Liquid carburising

c) Gas carburising	d) All of the above
Correct answer:	c
Q 52. Which of the following statements is/are false for heat treatment processes?	
a) Martempering process is designed to overcome limitations of quenching	b) Pearlite is obtained as the final phase in martempering process
c) . Water is used as quenching medium in Jominy end quench test	d) All of the above
Correct answer:	b
Q 53. The solubility of tin in copper above 580^{o}C _____	
a) decreases	b) increases
c) remains constant	d) none of the above
Correct answer:	a
Q 54. **Inconol nickel alloy contains** _____	
a) 75% Ni, 15% Cr and 9% Fe	b) 75% Ni, 15% Cr and 9% Al
c) 75% Ni, 15% Cr and 9% Mg	d) None of the above
Correct answer:	a
Q 55. Which one of the following is not equilibrium heat treatment?	
a) Austenetising	b) Annealing
c) Normalizing	d) Precipitation
Correct answer:	d
Q 56. A bearing material should not possess the characteristic of high _____	
a) coefficient of friction	b) hardness
c) melting point	d) thermal conductivity

QUESTION BANK

Subject: EMM

Correct answer:	a
Q 57. The gray cast iron has ____	
a) high melting point	b) high thermal conductivity
c) low compressive strength	d) all of the above
Correct answer:	b
Q 58. What is the effect of silicon on the structure of cast iron?	
a) Blowholes are present in the castings	b) Increases fluidity
c) . No effect	d) Reacts with iron to form iron sulphide
Correct answer:	b
Q 59. **Which of the following parameters is/are false for steel?**	
a) High carbon content	b) High melting point
c) Low damping capacity	d) None of the above
Correct answer:	a
Q 60. **Which desulphurising agent is used to remove sulphur from iron during melting?**	
a) Calcium carbide	b) Sodium carbonate
c) Soda ash	d) All of the above
Correct answer:	d

QUESTION BANK

Subject: Manufacturing Processes-I

Q1-Which one of the following welding processes uses non consumable electrode?	
a) Gas metal arc welding	b) Submerged arc welding
c) Gas Tungsten arc welding	d) Flux coated arc welding
Correct answer: C	
Q 2. The method of joining metal surface by introducing a non ferrous alloy with melting point above 400° C is known as	
a) Soldering	b) Brazing
c) Welding	d) none of the above
Correct answer: B	
Q 3. Cutting forces at the cutting tool can be measured by	
a) A dynamometer	b) A viscosity meter
c) A sine bar	d) A combination set
Correct answer: A	
Q 4. Extrusion is a process of**?**	
a) Pushing the heated billet of metal through an orifice	b) Producing a hole by a punch
c) Making cup shaped parts from the sheet metal	d) None of the above
Correct answer: A	
Q 5. The clearance angle is provided on the tools with a view to	
a) Strength the tool	b) Shear off the metal
c) Facilitate easy flow of chips	d) Prevent the tool from rubbing on workpiece
Correct answer: D	
Q 6. By cold working of materials, the fatigue strength	
a) increases	b) decreases
c) remains same	d) none of the above
Correct answer: A	
Q 7. Investment casting is used for	

QUESTION BANK

Subject: Manufacturing Processes-I

a) shapes which are made by difficulty using complex patterns in sand casting	b) mass production
c) shapes which are very complex and intricate and can't be cast by any other method	d) there is nothing like investment casting
Correct answer: C	
Q 8. Blow holes are casting defects	
a) which occur due to some sand shearing from the cope surface	b) which takes the form of internal voids of surface depression due to excessive gaseous material not able to escape
c) which occur due to discontinuity in metal casting resulting from hindered contraction	d) caused by two streams of metals that are too cold to fuse properly
Correct answer: B	
Q 9. Laser is produced by	
a) graphite	b) ruby
c) diamond	d) emerald
Correct answer: B	
Q 10. The major problem in hot extrusion is	
a) design of punch	b) design of die
c) wear and tear of die	d) wear of punch
Correct answer: C	
Q 11. File used for wood work is	
a) single cut file	b) double cut file
c) rasp cut file	d) none of the above
Correct answer: C	
Q 12. An example of fusion welding is	
a) arc welding	b) gas welding
c) thermit welding	d) forge welding

QUESTION BANK

Subject: Manufacturing Processes-I

Correct answer: A	
Q 13. Gases used in tungsten inert gas welding are	
a) hydrogen and oxygen	b) CO_2 and H_2
c) argon and neon	d) argon and helium
Correct answer: D	
Q 14. Oxy-acetylene flame is used to weld	
a) steel	b) copper alloys
c) stainless steel	d) cast iron
Correct answer: A	
Q 15. Orthogonal cutting system is also known as	
a) one-dimensional cutting system	b) two-dimensional cutting system
c) three-dimensional cutting system	d) none of the above
Correct answer: B	
Q 16. In metal cutting operations discontinuous chips are produced while machining	
a) brittle material.	b) ductile material
c) hard material	d) soft material
Correct answer: A	
Q 17. Term CLA (Centre Line Average) is used for	
a) surface roughness (finish)	b) surface hardness
c) cutting tool hardness	d) none of the above
Correct answer: A	
Q 18. Knurling is an operation of	
a) cutting smooth collars	b) under cutting
c) roughing the surface for hand grip	d) none of the above
Correct answer: C	
Q 19. Poor fusion in a welded is due to	
a) high welding speed	b) dirty metal surface

QUESTION BANK

Subject: Manufacturing Processes-I

c) improper current	d) lack of flux
Correct answer: C	
Q 20. Counterboring is the operation of	
a) enlarging the end of a hole cylindrically	b) cone-shaped enlargement of the end of a hole
c) smoothing and squaring the surface around a hole	d) sizing and finishing a hole
Correct answer: A	
Q 21. A connecting rod is made by	
a) casting	b) drawing
c) forging	d) extrusion
Correct answer: C	
Q 22. Preheating before welding is done to	
a) make the steel softer	b) burn away oil, grease, etc, from the plate surface
c) prevent plate distortion	d) prevent cold cracks
Correct answer: D	
Q 23. In Electro- Discharge Machining (EDM), the tool is made of	
a) Copper	b) High speed steel
c) Cast iron	d) Plain carbon steel
Correct answer: A	
Q 24. Which of the following is a single point cutting tool?	
a) Hacksaw blade	b) Milling cutter
c) Grinding wheel	d) Parting tool
Correct answer: D	
Q 25. In ASA System, if the tool signature is 8-6-5-5-10-15-2-mm, then the side rake angle will be	
a) 5°	b) 6°
c) 8°	d) 10°

QUESTION BANK

Subject: Manufacturing Processes-I

Correct answer:B	
Q 26. Cold working of metal increases	
a) tensile strength	b) hardness
c) yield strength	d) all of the above
Correct answer: D	
Q 27. Seamless tube can be produced by	
a) two high rolling mill	b) ring rolling combined with stretch forming
c) piercing	d) steam hammering forging
Correct answer: C	
Q 28. In electro chemical machining (ECM) the material removal is due to	
a) corrosion	b) erosion
c) . fusion	d) ion displacement
Correct answer: D	
Q 29. Crater wear occurs mainly due to	
a) abrasion	b) diffusion
c) oxidation	d) adhesion
Correct answer: B	
Q 30. Tool life of the cutting tool is most affected by	
a) Cutting speed	b) Tool geometry
c) Cutting feed and depth	d) Microstructure of material being cut
Correct answer: A	
Q31-Metal in machining operation is removed by	
a) Tearing chips	b) Shearing the metal across a zone
c) Distortion of metal	d) Cutting the metal across a zone
Correct answer:	B
Q 32. **Usual casting method for making dental crowns**	

QUESTION BANK

Subject: Manufacturing Processes-I

a) Sand casting	b) Die casting
c) Continuous casting	d) Investment casting
Correct answer:	D
Q 33. **The mechanism of material removal in EDM process is**	
a) Melting and Evaporation	b) Melting and Corrosion
c) Erosion and Cavitation	d) Cavitation and Evaporation
Correct answer:	A
Q 34. **If the metals are ductile and the cutting speed is high, then**	
a) Continuous chips are formed	b) Discontinuous chips are formed
c) Continuous chips with built-up edges are formed	d) None of these
Correct answer:C	
Q 35. **Good surface finish and better dimensional accuracy can be achieved in**	
a) cold working process .	b) hot working process
c) **.** both a. and b. .	d) none of the above
Correct answer:	D

QUESTION BANK

Subject: Manufacturing Processes-I

Q 36. **Which type of process the machining can be?**	
a) Cold working	b) Hot working
c) Both a. and b.	d) None of the above
Correct answer:	A
Q 37. **) Which of the following options best describes the centre lathes?**	
a) Machining machines	b) Shaping machines
c) Turning machines	d) None of the above
Correct answer:	B
Q 38. **When the tool of centre lathe moves perpendicular to the axis of rotation,**	
a) it produces a cylindrical surface	b) it produces a flat surface
c) it produces a tapered surface	d) none of the above
Correct answer:	B
Q39) The foundation of the centre lathe is called as	
a) carriage	b) tray
c) **.** base	d) bed
Correct answer:	D
Q 40. **) The centre lathes receive their power through**	
a) headstock	b) tailstock

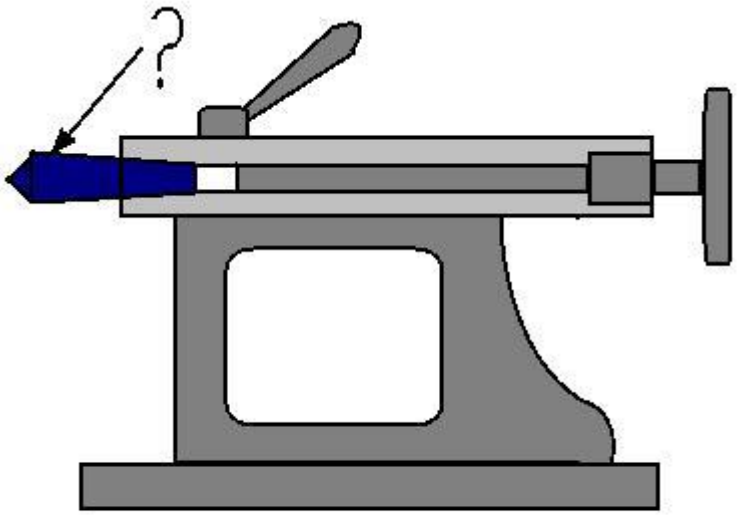
QUESTION BANK

Subject: Manufacturing Processes-I

c) both a. and b.	d) none of the above
Correct answer:	A

Q 41.**Consider the following diagram of tailstock.**

The part shown in blue color in the below diagram is called as



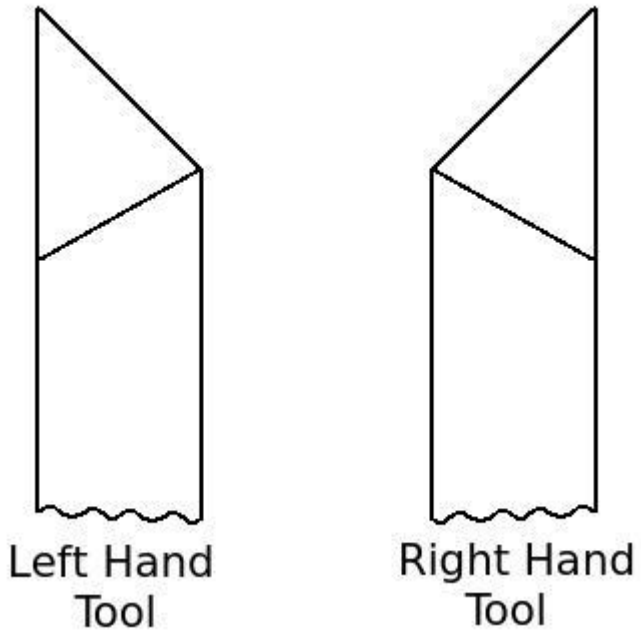
a) tailstock clamping lever	b) **.** tailstock dead centre
c) tailstock spindle	d) none of the above
Correct answer:	C

Q 42. **)** **Which of the following is not a part of carriage of the centre lathe?**

a) Tool post	b) Apron
c) Compound rest	d) Gear box controls

QUESTION BANK

Subject: Manufacturing Processes-I

Correct answer:	D
Q 43. **What is swing over carriage?**	
a) The maximum diameter of workpiece that can be rotated over the bed ways	b) The minimum diameter of workpiece that can be rotated over the bed ways
c) The maximum diameter of workpiece that can be rotated over lathe saddle	d) The minimum diameter of workpiece that can be rotated over lathe saddle
Correct answer:	C
Q 44. **) Consider the following diagram of machining tool. What is the type of the tool shown below**  **?**	
a) Turning tool	b) Facing tool
c) Chamfering tool	d) Parting or necking tool

QUESTION BANK

Subject: Manufacturing Processes-I

Correct answer:	C
Q 45. **Which of the following statements is/are true for welding process?**	
a) General welding equipments are very costly	b) Welding results in residual stresses and distortion of workpiece
c) Two dissimilar metals cannot be joined by welding	d) All of the above
Correct answer:	B
Q 46. **The metal joined is never brought to a molten stage in**	
a) pressure welding	b) fusion welding
c) thermit welding	d) none of the above
Correct answer:	A
Q 47. **) Which of the following is an example of fusion welding?**	
a) Atomic hydrogen welding	b) Flash welding
c) Seam welding	d) Spot welding
Correct answer:	A
Q 48. **) In resistance electric welding, the current passed through two joining metal pieces is**	
a) 230 to 440 volts, at a high amperage	b) 230 to 440 volts, at a low amperage
c) 2 to 8 volts, at a high amperage	d) 2 to 8 volts, at a low amperage

QUESTION BANK

Subject: Manufacturing Processes-I

Correct answer:	C
Q 49. **) As compared to the arc welding, the gas welding takes**	
a) considerably less time for the metal to heat up	b) **.** considerably more time for the metal to heat up
c) approximately same time for the metal to heat up as arc welding	d) **.** unpredictable
Correct answer:	B
Q 50. **) Power consumption in D.C. arc welding is**	
a) less than the power consumption in A.C. arc welding	b) more than the power consumption in A.C. arc welding
c) similar to the power consumption in A.C. arc welding	d) very difficult to calculate
Correct answer:	B
Q 51. **Which type of arc welding is suitable for joining non-ferrous metals?**	
a) D.C. Arc welding	b) A.C. Arc welding
c) Both D.C. As well as A.C. Arc welding	d) None of the above
Correct answer:	A
Q 52. **Which current is used in Tungsten Inert-Gas (TIG) welding?**	

QUESTION BANK

Subject: Manufacturing Processes-I

a) Only A.C. can be used as welding current	b) Only D.C. can be used as welding current
c) Both A.C. and D.C. can be used as welding current	d) Both A.C. and D.C. can be used as welding current
Correct answer:	C
Q 53. **The welding process by Metal Inert-Gas (MIG) welding is**	
a) **.** slower than the welding process by Tungsten Inert-Gas (TIG) welding	b) **.** faster than the welding process by Tungsten Inert-Gas (TIG) welding
c) at same speed as the welding process by Tungsten Inert-Gas (TIG) welding	d) at unpredictable speed
Correct answer:	B
Q 54. **Which of the following statements are true for ultrasonic welding?** **1. Productivity of ultrasonic welding is high** **2. Thin pieces can be welded to thicker pieces by ultrasonic welding** **3. Ultrasonic welds contain foreign inclusions** **4. Post cleaning of welds is necessary in ultrasonic welding** **5. Preparation required for ultrasonic welding process is very little**	
a) (1), (2) and (4)	b) (2), (3) and (4)
c) 1), (3) and (5)	d) (1), (2) and (5)
ANSWER	D

QUESTION BANK

Subject: Manufacturing Processes-I

Q 55. **Which of the following is a soft solder?**	
a) Copper-zinc alloy	b) **.** Nickel-silver alloy
c) Lead-tin alloy	d) All of the above
Correct answer:	C
Q 56. **What is used as joining medium in brazing operation?**	
a) Copper-zinc alloy	b) Nickel-silver alloy
c) Lead-tin alloy	d) All of the above
Correct answer:	A
Q 57. **Joint strength in brazing operation is**	
a) as high as in gas or arc welding	b) not as high as in gas or arc welding
c) higher than that of in gas or arc welding	d) unpredictable
Correct answer:	B
Q 58. **) Which of the following statements are correct for plastic?** **1. Plastic is a non-metallic material that can be moulded to any shape** **2. Plastic is a natural or synthetic resin** **3. Plastic is of organic nature composed of hydrogen, oxygen, carbon and nitrogen**	
a) only statements 1 and 2 correct, statement 3 is wrong	b) only statements 1 and 3 correct, statement 2 is wrong

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c) . only statements 2 and 3 correct, statement 1 is wrong	d) all of above statements 1, 2 and 3 are correct
Correct answer:	D
Q 59. **The plastics which soften when heat is applied with or without pressure, but requires cooling to set them to shape are called as**	
a) thermosofting materials	b) . thermosetting materials
c) thermoplastic materials	d) thermostatting materials
Correct answer:	C
Q 60. **Thermosetting materials are**	
a) the plastics which can be softened even after they have set and hardened	b) the plastics which require heat and pressure to mould them into shape
c) both a. and b.	d) none of the above
Correct answer:	B

QUESTION BANK

Subject: Strength of Materials-I

Q 1. The law which states, “within elastic limits strain produced is proportional to the stress producing it”, is known as	
a) Stress law	b) Hooke's law
c) Poisson's law	d) Bernoulli's law
Correct answer: b	
Q 2. The deformation per unit length is called	
a) tensile stress	b) compressive stress
c) shear stress	d) strain
Correct answer: d	
Q 3. Young’s modulus is a ratio of	
a) Strain/Stress	b) Change in length/Original length
c) Stress/Strain	d) Stress/Original length
Correct answer: c	
Q 4. The ratio of lateral strain to the linear strain is	
a) Young’s modulus	b) Poisson’s ratio
c) Bulk modulus	d) Modulus of rigidity
Correct answer: b	
Q 5. A body is subjected to a tensile stress of 1200 MPa on one plane and another tensile stress of 600 MPa on a plane at right angles to the former. It is also subjected to a shear stress of 400 MPa on the same planes. The maximum normal stress will be	
a) 400 MPa	b) 1400 MPa
c) 800 MPa	d) 900 MPa
Correct answer: b	

QUESTION BANK

Subject: Strength of Materials-I

Q 6. A steel bar of 5 mm is heated from 15° C to 40° C and it is free to expand. The bar Will induce	
a) no stress	b) shear stress
c) tensile stress	d) compressive stress
Correct answer: a	
Q 7. The extremities of any diameter on Mohr's circle represent.	
a) Principal stress	b) Normal stress on plane at 45 degree
c) Shear stress on plane 45 degree	d) None of the above
Correct answer: a	
Q 8. **When a body is subjected to three mutually perpendicular stress of equal intensity, the ratio of direct stress to the corresponding volumetric strain is known as**	
a) Young's modulus	b) Bulk modulus
c) Modulus of rigidity	d) None of the above
Correct answer: b	
Q 9. The value of Poisson's ratio always remains	
a) greater than one	b) less than one
c) equal to one	d) none of these
Correct answer: b	
Q 10. The stress necessary to initiate yielding, is considerably	
a) less than that necessary to continue it	b)more than that necessary to continue it
c) more than that necessary to stop it	d) less than that necessary to stop it.
Correct answer: b	
Q 11. In terms of Poisson's ratio (μ) the ratio of Young's Modulus (E) to Shear	

QUESTION BANK

Subject: Strength of Materials-I

Modulus (G) of elastic materials is	
a) 2(1+μ)	b) 2(1-μ)
c) 1/2(1+μ)	d) 1/2(1-μ)
Correct answer: a	
Q 12. **Which one of the following is represented by the area of the S.F. diagram from one end upto a given location on the beam?**	
a) B.M. at the location	b) Load at the location
c) Slope at the location	d) Deflection at the location
Correct answer: a	
Q 13. Shear force for a cantilever carrying a uniformly distributed load over its length, is	
a) rectangle	b) triangle
c) parabola	d) cubic parabola.
Correct answer: b	
Q 14. The moment diagram for a cantilever which is subjected to a uniformly distributed load will be a	
a) rectangle	b) triangle
c) parabola	d) cubic parabola.
Correct answer: c	
Q 15. The moment diagram for a cantilever carrying linearly varying load from zero at its free end and to maximum at the fixed end will be a	
a) rectangle	b) triangle
c) parabola	d) cubic parabola.
Correct answer: d	

QUESTION BANK

Subject: Strength of Materials-I

Q 16. The neutral axis of the cross-section a beam is that axis at which the bending stress is	
a) zero	b) minimum
c) maximum	d) infinity
Correct answer: a	
Q 17. A beam is said to be of uniform strength, if	
a) deflection is same throughout the beam	b) B.M. is same throughout the beam
c) shear stress is same throughout the beam	d) bending stress is same throughout the beam
Correct answer: d	
Q 18. The number of points of contraflexure in a simple supported beam carrying uniformly distributed load, is	
a) 1	b) 0
c) 2	d) 3
Correct answer: b	
Q 19. The bending moment is maximum on a section where shearing force	
a) is minimum	b) is equal
c) is maximum	d) changes sign
Correct answer: d	
Q 20. The areas of cross-section of a square beam and a circular beam subjected to equal bending moments, are same.	
a) both the beams are equally strong	b) square beam is more economical
c) both the beams are equally	d) circular beam is more economical

economical	
Correct answer: b	
Q 21. The neutral axis of a beam cross-section must	
a) pass through the centroid of the section	b) be equidistant from the top of bottom films
c) be an axis of symmetry of the section	d) none of these
Correct answer: a	
Q 22. Pick up the correct assumption of the theory of simple bending	
a) Transverse section of a beam remains plane before and after bending	b) The material of the beam is homogeneous and isotropic
c) The resultant pull or thrust on transverse section of a beam is zero	d) all
Correct answer: d	
Q 23. The moment diagram for a cantilever whose free end is subjected to a bending moment, will be a	
a) rectangle	b) triangle
c) parabola	d) cubic parabola.
Correct answer: a	
Q 24. When a rectangular beam is loaded transversely, the maximum compressive stress develops on	
a) top fibre	b) bottom fibre
c) neutral axis	d) every cross-section
Correct answer: a	
Q 25. Beams of uniform strength are preferred to those of uniform section because	

these are economical for	
a) heavy weights	b) large spans
c) light weights	d) short spans
Correct answer: b	
Q 26. In a continuous bending moment curve the point where it changes sign, is called	
a) point of inflexion	b) point of contraflexture
c) point of virtual hinge	d) all
Correct answer: d	
Q 27. In a simple bending of beams, the stress in the beam varies	
a) hyperbolically	b) linearly
c) parabolically	d) elliptically
Correct answer: b	
Q 28. Which one of the following materials is highly elastic?	
a) Rubber	b) Brass
c) Steel	d) Glass
Correct answer: C	
Q 29. A freely supported beam at its ends carries a central concentrated load, and maximum bending moment is M. If the same load be uniformly distributed over the beam length, then what is the maximum bending moment?	
a) M	b) M/2
c) M/3	d) 2M
Correct answer: b	
Q 30. If the SF diagram for a beam is a triangle with length of the beam as its	

base, the beam is:	
a) A cantilever with a concentrated load at its free end	b) A cantilever with udl over its whole span
c) Simply supported with a concentrated load at its mid-point	d) Simply supported with a udl over its whole span
Correct answer: b	
Q 31. The shear stress at any section of a shaft is maximum	
a) at a distance r/2 from the centre	b) at the centre of the section
c) at a distance 3/4 r from the centre	d) at the top of the surface
Correct answer: d	
Q 32. The following assumption is not true in the theory of pure torsion :	
a) The twist along the shaft is uniform	b) The shaft is of uniform circular section throughout
c) Cross-section of the shaft, which is plane before twist remains plane after twist	d) All radii get twisted due to torsion
Correct answer: d	
Q 33. The point of contraflexure occurs in	
a) cantilever beams	b) simply supported beams
c) fixed beams	d) overhanging beams
Correct answer: d	
Q 34. A beam of uniform strength has	
a) same bending moment at every section	b) same bending stress at every section

c) same shear stress at every section	d)
Correct answer: b	
Q 35. Two beams of equal cross-sectional area are subjected to equal bending moment. If one beam has square cross-section and the other has circular section, then	
a) Both beams will be equally strong	b) Circular section beam will be stronger
c) Square section beam will be stronger	d) The strength of the beam will depend on the nature of loading
Correct answer: b	
Q 36. A beam with a rectangular section of 120 mm × 60 mm, designed to be placed vertically is placed horizontally by mistake. If the maximum stress is to be limited, the reduction in load carrying capacity would be	
a) 1/4	b) 1/3
c) 1/2	d) 1/6
Correct answer: c	
Q 37. A Cantilever beam of rectangular cross-section is 1m deep and 0.6 m thick. If the beam were to be 0.6 m deep and 1m thick, then the beam would	
a) Be weakened 0.5 times	b) Be weakened 0.6 times
c) Be strengthened 0.6 times	d) Have the same strength
Correct answer: b	
Q 38. A pipe of external diameter 3 cm and internal diameter 2 cm and of length 4 m is supported at its ends. It carries a point load of 65 N at its centre. The sectional modulus (cm^3)of the pipe will be:	
a) 65π/64	b) 65π/32

c) 65π/96	d) 65π/128
Correct answer: C	
Q 39. A solid circular shaft of 60 mm diameter transmits a torque of 1600 N.m. The value of maximum shear stress developed is	
a) 37.72 MPa	b) 47.72 MPa
c) 57.72 MPa	d) 67.72 MPa
Correct answer: a	
Q 40. Two shafts 'A' and 'B' are made of same material. The shaft 'A' is solid and has diameter D. The shaft 'B' is hollow with outer diameter D and inner diameter D/2. The strength of hollow shaft in torsion is _____ as that of solid shaft.	
a) 1/16	b) 1/8
c) 1/4	d) 15/16
Correct answer: d	
Q 41. The ratio of the effective length of a column and minimum radius of gyration of its cross-sectional area, is known	
a) buckling factor	b) crippling factor
c) slenderness ratio	d) none of these
Correct answer: c	
Q 42. Euler's formula holds good only for	
a) long columns	b) both short and long columns
c) short columns	d) weak columns
Correct answer: a	
Q 43. Compression members always tend to buckle in the direction of the	
a) perpendicular to the axis of load	b) least radius of gyration

QUESTION BANK

Subject: Strength of Materials-I

c) axis of load	d) minimum cross section
Correct answer: b	
Q 44. For which one of the following columns, Euler buckling load = $4\pi^2L^2/EI$?	
a) Column with both hinged ends	b) Column with one end fixed and other end free
c) Column with both ends fixed	d) Column with one end fixed and other hinged
Correct answer: c	
Q 45. A column of length 'l' is fixed at its both ends. The equivalent length of the column is	
a) 2 l	b) 4 l
c) 0.5 l	d) l
Correct answer: c	
Q 46. What is the expression for the crippling load for a column of length „l" with one end fixed and other end free?	
a) $4\pi^2L^2/EI$	b) π^2L^2/EI
c) $2\pi^2L^2/EI$	d) $\pi^2L^2/4EI$
Correct answer: c	
Q 47. A structural member subjected to an axial compressive force is called	
a) Beam	b) Column
c) Frame	d) Strut
Correct answer: b	
Q 48. If diameter of a long column is reduced by 20%, the percentage of reduction in Euler buckling load is:	

QUESTION BANK

Subject: Strength of Materials-I

a) 4	b) 36
c) 49	d) 59
Correct answer: d	
Q 49. The Euler's crippling load for a 2m long slender steel rod of uniform cross-section hinged at both the ends is 1 kN. The Euler's crippling load for 1 m long steel rod of the same cross-section and hinged at both ends will be:	
a) 0.25 kN	b) 0.5 kN
c) 2 kN	d) 4 kN
Correct answer: d	
Q 50. Four vertical columns of same material, height and weight have the same end conditions. Which cross-section will carry the maximum load?	
a) Solid circular section	b) Thin hollow circular section
c) Solid square section	d) I-section
Correct answer: b	
Q 51. If the length of a cantilever carrying an isolated load at its free end is doubled, the deflection of the free end will increase by	
a) 1/8	b) 2
c) 3	d) 8
Correct answer: a	
Q 52. If the depth of a simply supported beam carrying an isolated load at its centre, is doubled, the deflection of the beam at the centre will be changed by a factor of	
a) 1/8	b) 2
c) 4	d) 8

Correct answer: a	
Q 53. The simply supported beam ‘A’ of length l carries a central point load W. Another beam ‘B’ is loaded with a uniformly distributed load such that the total load on the beam is W. The ratio of maximum deflections between beams A and B is	
a) 5/8	b) 5/4
c) 8/5	d) 4/5
Correct answer: c	
Q 54. A cantilever of length L, moment of inertia I. Young's modulus E carries a concentrated load W at the middle of its length. The slope of cantilever at the free end is:	
a) $WL^2/2EI$	b) $WL^2/4EI$
c) $WL^2/8EI$	d) $WL^2/16EI$
Correct answer: c	
Q 55. A cantilever beam carries a load W uniformly distributed over its entire length. If the same load is placed at the free end of the same cantilever, then the ratio of maximum deflection in the first case to that in the second case will be:	
a) 3/8	b) 8/3
c) 5/8	d) 8/5
Correct answer: a	
Q 56. A simply supported beam of constant flexural rigidity and length 2L carries a concentrated load 'P' at its mid-span and the deflection under the load is x. If a cantilever beam of the same flexural rigidity and length 'L' is subjected to load 'P' at its free end, then the deflection at the free end will be:	
a)1/2 x	b) 2 x

c) x	d) 4 x
Correct answer: b	
Q 57. At a certain section at a distance 'x' from one of the supports of a simply supported beam, the intensity of loading, bending moment and shear force arc W_x, M_x and V_x respectively. If the intensity of loading is varying continuously along the length of the beam, then the invalid relation is:	
a) slope $Q_x = M_x / V_x$	b) $V_x = dM_x / dx$
c) $W_x = d^2M_x / dx^2$	d) $W_x = dV_x / dx$
Correct answer: a	
Q 58. Which one of the following is represented by the area of the S.F diagram from one end upto a given location on the beam?	
a) B.M. at the location	b) Load at the location
c) Slope at the location	d) Slope at the location
Correct answer: a	
Q 59. If for a beam dM/dx = 0 for its whole length, the beam is a cantilever. Which is the correct statement?	
a) Free from any load	b) Subjected to a concentrated load at its free end
c) Subjected to an end moment	d) Subjected to a udl over its whole span
Correct answer: c	
Q 60. By conjugate beam method, the slope at any section of an actual beam is equal to	
a) EI times the S.F. of the conjugate	b) EI times the B.M. of the conjugate

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beam	beam
c) S.F. of conjugate beam	d) B.M. of the conjugate beam
Correct answer: c	

QUESTION BANK

Subject: Theory of Machines-I

Q 1. **A rigid body possesses_____degrees of freedom.**	
a)One	b) Two
c) Four	d) Six
Correct answer: d	
Q 2. **Which of the following is an open pair?**	
a) Journal bearing	b) Ball and Socket joint
c) Leave screw and nut	d) None of the above
Correct answer: c	
Q 3. **Which of the following is a higher pair?**	
a) Turning pair	b) Screw pair
c) Belt and pulley	d) None of the above
Correct answer: c	
Q 4. **A higher pair has_____.**	
a)Point contact	b)Surface contact
c)No contact	d)Non of the above
Correct answer: a	
Q 5. **In a ball bearing, ball and bearing forms a**	
a)Turning pair	b)Rolling pair
c)Screw pair	d)Spherical pair
Correct answer: b	
Q 6. **Transmission angle is the angle between**	
a)Input link coupler	b)Input link and fixed link
c)Output link and coupler	d)Output link and fixed link
Correct answer: c	
Q 7. **Which of the following is an inversion of Single slider crank chain?**	

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a) . Beam engine	b) Rotary engine
c) Oldham's coupling	d) Elliptical trammel
Correct answer: b	
Q 8. **. _____ is an inversion of Double slider crank chain.**	
a) Coupling rod of a locomotive	b) Scotch yoke mechanism
c) Hand pump	d) Reciprocating engine
Correct answer:b	
Q 9. **. A ball and a socket forms a**	
a) Turning pair	b) Rolling pair
c) Screw pair	d) Spherical pair
Correct answer: d	
Q 10. **The Kutzbach criterion for determining the number of degrees of freedom (n) is (where l = number of links, j = number of joints and h = number of higher pairs)**	
a) n = 3(l-1)-2j-h	b) n = 2(l-1)-2j-h
c) n = 3(l-1)-3j-h	d) n = 2(l-1)-3j-h
Correct answer: a	
Q 11. **. A fixed gear having 200 teeth is in mesh with another gear having 50 teeth. The two gears are connected by an arm. The number of turns made by the smaller gear for one revolution of arm about the centre of bigger gear is**	
a) 2	b) 4
c) 3	d) None of the above
Correct answer: b	
Q 12. **Which gear is used for connecting two coplanar and intersecting shafts?**	
a) Spur gear	b) Helical gear
c) Bevel gear	d) None of the above

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Correct answer: c	
Q 13. **Module of a gear is**	
a) D/T	b) T/D
c) 2D/T	d) 2T/D
Correct answer: a	
Q 14. **. Length of arc of contact is given by**	
a) Arc of approach - Arc of recess	b) Arc of approach + Arc of recess
c) Arc of approach / Arc of recess	d) Arc of approach x Arc of recess
Correct answer: b	
Q 15. **. The type of gears used to connect two non parallel and non intersecting shafts is**	
a) Spur gear	b) Helical gear
c) Bevel gear	d) Spiral gear
Correct answer: d	
Q 16. **To connect two parallel and coplanar shafts the following type of gearing is used**	
a) Spur gear	b) Bevel gear
c) Spiral gear	d) None of the above
Correct answer: a	
Q 17. **In which of the following type of gear train the first gear and the last gear are co-axial.** a. b. c d. (Ans:c)	
a) Simple gear train	b) Compound gear train
c) Reverted gear train	d) None of the above
Correct answer: c	
Q 18. **. Which gear train is used for higher velocity ratios in a small space?**	

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a) Simple gear train	b) Compound gear train
c) Reverted gear train	d) Epicyclic gear train
Correct answer: d	
Q 19. **Which type of gear train is used in clock mechanism to join hour hand and minute hand?**	
a) Simple gear train	b) Compound gear train
c) Reverted gear train	d) Epicyclic gear train
Correct answer: d	
Q 20. **Which type of gearing is used in steering system of an automobile?**	
a) Rack and pinion	b) Worm and wheel
c) Spiral gears	d) None of the above
Correct answer: a	
Q 21. **The couple will balance one another couple when they are in the same plane and**	
a) Have unequal moments and their direction of rotation is opposite	b) Have equal moments and their direction of rotation is same
c) Have equal moments and their direction of rotation is opposite	d) None of the above
Correct answer: c	
Q 22. **The frictional torque transmitted in a conical pivot bearing, considering uniform pressure is (Where R is the radius of shaft, α is semi angle of the cone, μ is coefficient of friction, and W is the load on bearing)**	
a) (μWR cosecα)/2	b) (3μWR cosecα)/4
c) (2μWRcosecα)/3	d) None of the above
Correct answer:	
Q 23. **The friction circle is a circle drawn when a journal rotates in a bearing. Its radius depends upon the coefficient of friction and**	

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a) Angular velocity of journal	b) Magnitude of the forces on journal
c) Radius of journal	d) None of the above
Correct answer:	

Q 24. **When the addenda on pinion and wheel is such that the path of approach and path of recess are the half of their maximum possible value, then the length of path of contact is given by (where r is pitch circle radius of pinion, R is the pitch circle radius of wheel and Φ is the pressure angle)**

a) $\{(r_2+R_2)\cos\Phi\}/2$	b) $\{(r+R)\sin\Phi\}/2$
c) $\{(r+R)\cos\Phi\}/2$	d) None of the above
Correct answer:	

Q 25. **The ratio of height of porter governor (when length of arms and links are equal) to the height of watt governor is (Where m is the mass of the ball and M is the mass of sleeve)**

a) (m+M)/m	b) M/(m+M)
c) m/(m+M)	d) None of the above
Correct answer:	

Q 26. **A governor is said to be isochronous when equilibrium speed of all radii of rotation of the balls with in the working range**

a) Is constant	b) Varies uniformly
c) Is not constant	d) None of the above
Correct answer:	

Q 27. **The ratio of tension of two side of a flat belt is given by**

a) $e^{-\mu\theta}$	b) $e^{\mu\theta}$
c) e x μ x θ	d) None of the above
Correct answer:	

Q 28. **Crowning of a pulley is done to**

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a) Prevent the slipping of a belt	b) To increase the tension of a belt
c) To increase the angle of contact	d) None of the above
Correct answer:	
Q 29. **The power transmitted by a belt drive is (T_1=Tension on tight side, T_2=Tension on slack side, where v = linear velocity, ω = angular velocity)**	
a) (T_1-T_2) x v	b) (T_1-T_2) x ω
c) (T_1-T_2) / v	d) (T_1-T_2) /ω
Correct answer:	
Q 30. **The number of Instantaneous centres in a mechanism is (where n is the number of links)**	
a) n(n-1)/2	b) 2n(n-1)/3
c) n(2n-1)/2	d) 3n(n-1)/2
Correct answer:	
Q 31. **For L number of links in a mechanism, the number of possible inversions is equal**	
a) L-2	b) L-1
c) L	d) L+1
Correct answer:	
Q 32. **Oldham's coupling is the inversion of**	
a) four bar mechanism	b) crank and lever mechanism
c) single slider crank mechanism	d) double slider crank mechanism
Correct answer:	
Q 33. **. The tooth profile most commonly used in gear drives for power transmission is**	
a) A cycloid	b) An involute
c) An ellipse	d) A parabola

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Correct answer:	
Q 34. **. The radius of gyration of a solid disc type flywheel of diameter 'D' is**	
a) D	b) D/2
c) D/√2	d) (√3/2)D
Correct answer:	
Q 35. **A Hartnell governor is a governor of the**	
a) inertia type	b) pendulum type
c) centrifugal type	d) dead weight type
Correct answer:	
Q 36. **. A governor is said to be isochronous when the equilibrium speed for all radii of rotation of the balls within the working range**	
a) is not constant	b) is constant
c) varies uniformly	d) has uniform acceleration
Correct answer:	
Q 37. **In reciprocating engines primary forces**	
a) are completely balanced	b) are partially balanced
c) are balanced by secondary forces	d) cannot be balanced
Correct answer:	
Q 38. **If a damping factor in a vibrating system is unity, then the system will**	
a) have no vibrations	b) be highly damped
c) be underdamped	d) be critically damped
Correct answer:	
Q 39. **For steady state forced vibrations, the phase lag at resonance is**	
a) 0°	b) 45°

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c) 90°	d) 180°
Correct answer:	
Q 40. **. For spur with gear ratio greater than one, the interference is most likely to occur near the**	
a) pitch point	b) point of beginning of contact
c) point of end of contact	d) root of the tooth
Correct answer:	
Q 41. **What is the number of instantaneous centres for an eight link mechanism?**	
a) 15	b) 28
c) 30	d) 8
Correct answer: b	
Q 42. **The method of direct and reverse cranks is used in engines for**	
a) the control of speed fluctuations	b) balancing of forces and couples
c) kinematic analysis	d) vibration analysis
Correct answer: b	
Q 43. **Oldham's coupling is an inversion of the kinematic chain used in**	
a) Whitworth quick return mechanism	b) Elliptical trammel
c) Rotary engine	d) Universal joint
Correct answer: b	
Q 44. **In balancing of 4-stroke in line engines, firing order helps to control the magnitude of**	
a) Primary forces only	b) Secondary forces only
c) Primary forces and primary couples only	d) Primary and secondary couples only
Correct answer:	
Q 45. **Which one of the following statements in respect of involute profiles for gear teeth is not correct?**	

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a) Interference occurs in involute profiles	b) Involute tooth form is sensitive to change in centre distance between the base circles.
c) . Basic rack for involute profile has straight line form	d) Pitch circle diameters of two mating involute gears are directly proportional to the base circle diameters.
Correct answer:	
Q 46. **Which one of the following is an exact straight line mechanism using lower pairs?** a. Watt's mechanism b. Grasshopper mechanism c. Robert's mechanism d. Paucellier's mechanism (Ans:d) **47.**	
a)	b)
c)	d)
Correct answer:	
Q 47. **In a system subjected to damped forced vibrations, the ratio of maximum displacement to the static** **deflection is known as**	
a) Critical damping ratio	b) Damping factor
c) Logarithmic decrement	d) Magnification factor
Correct answer: d	
Q 48. **Consider the following statements:** **Coriolis acceleration component appears in the acceleration analysis of the following planar mechanisms:** a. Whitworth quick return mechanism b. Slider crank mechanism c. Scotch Yoke mechanism Which of these statements is/are correct?	
a) 1, 2 and 3	b) 1 and 2
c) 2 and 3	d) 1 only
Correct answer:	
Q 49. **Consider the following mechanisms:** 1. Oscillating cylinder engine mechanism 2. Toggle mechanism 3. Radial cylinder engine mechanism 4. Quick return mechanism **Which of the above are inversions of slider crank mechanism?**	

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a) 1, 2 and 4	b) 2, 3 and 4
c) 1, 2 and 3	d) 1, 3 and 4
Correct answer: d	
Q 50. **With usual notations for different parameters involved, the maximum fluctuations of energy for a flywheel is given by**	
a) $2EC_S$	b) $EC_S/2$
c) $2EC_S$	d) $2E_2C_S$
Correct answer: a	
Q 51. **. Whirling speed of the shaft is the speed at which**	
a) Shaft tends to vibrate in longitudinal direction	b) torsional vibrations occur
c) shaft tends to vibrate vigorously in transverse direction	d) combination of transverse and longitudinal vibration occurs
Correct answer: c	
Q 52. **The frictional torque transmitted in a flat pivot bearing, assuming uniform wear, is**	
a) μWR	b) ¾μWR
c) (2/3)μWR	d) ½μWR(Where μ = Coefficient of friction, W=Load over the bearing, R=Radius of bearing)
Correct answer: d	
Q 53. **The velocity of sliding of meshing gear teeth is** a. b. c. d. (Ans:c) **54.**	
a) $(\omega_1 + \omega_2)y$	b) $(\omega_1/\omega_2)y$
c) $(\omega_1 \times \omega_2)y$	d) $(\omega_1+\omega_2)/y$ (Where ω_1 and ω_2 are angular velocities of meshing gears and 'y' is distance between point of contact and the pitch point)

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Correct answer: c	
Q 54. **A speed reducer unit consists of a double threaded worm of pitch = 11mm and a worm wheel of pitch diameter = 84 mm. The ratio of output torque to the input torque is**	
a) 7.6	b) 12
c) 24	d) 42
Q 55. **Hammer blow**	
a) is the maximum horizontal unbalanced force caused by the mass provided to balance the reciprocating masses.	b) is the maximum vertical unbalanced force caused by the mass added to balance the reciprocating masses
c) varies as the square root of the speed	d) varies inversely with the square of the speed
Correct answer: b	
Q 56. **A pulley and belt in a belt drive form a**	
a) cylindrical pair	b) turning pair
c) rolling pair	d) sliding pair
Correct answer: b	
Q 57. **In a hydrodynamic journal bearing, there is** a b. c. d. (Ans:b)	
a) . a very thin film of lubricant between the journal and the bearing such that there is contact between the journal and the bearing	b) a thick film of lubricant between the journal and the bearing
c) no lubricant between the journal and the bearing	d) a forced lubricant between the journal and the bearing
Correct answer: b	
Q 58. **58. The balancing weights are introduced in planes parallel to the plane of rotation of the disturbing mass. To obtain complete dynamic balance, the minimum number of balancing weights to be introduced in different planes is**	

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a) 1	b) 2
c) 3	d) 4
Correct answer: b	
Q 59. **. The unbalanced force in a single cylinder reciprocating engine is** 1. equal to inertia force of the reciprocating masses 2. equal to gas force 3. Always fully balanced Which of the statement(s) is/are correct?	
a) 1 alone	b) 2 alone
c) 1 and 3	d) 2 and 3
Correct answer:	
Q 60. **. Minimum number of teeth for involute rack and pinion arrangement for pressure angle of 20° is**	
a) 18	b) 20
c) 30	d) 34
Correct answer: a	

QUESTION BANK

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Q 1. Stagnation temperature can be related to the static temperature and dynamic temperature as under	
a)Stagnation temperature = Static temperature – Dynamic temperature	b)Stagnation temperature = Static temperature + Dynamic temperature
c)Stagnation temperature = Dynamic temperature – Static temperature	d)None of these
Correct answer:B	
Q 2. In case of multistage compressor inspite of constant stage efficiency the isentropic compression efficiency goes on reducing with increasing pressure ratio due to	
a)Preheating effect	b)Increase in temperature due to friction
c)Friction in a stage results in more work requirement in next stage	d)All of above
Correct answer:D	
Q 3. For delivery pressure more than 85 bar the number of stages desired in compressor	
a)1	b)2
c)3	d)4
Correct answer: D	
Q 4. The compression work requirement is minimum in case of the compression following process of,	
a) Adiabatic type	b) Isochoric type
c) Isothermal type	d) Hyperbolic type
Correct answer:C	
Q 5**. The ratio of volume of free air sucked into cylinder and the swept volume of LP cylinder is called,**	
a) Volumetric efficiency	b) Diagramefficency
c) Compression efficiency	d) None of these
Correct answer:A	
Q 6. **What will happen to the volumetric efficiency with increasing pressure ratio in case of single stage compression in compressors?**	
a) Decrease	b) Increase
c) Remains unaffected	d) None of these
Correct answer:	A
Q 7. **In order to get the same free air delivery from a compressor how should the size of cylinder be changed with increasing pressure ratio?**	
a) Increased	b) Reduced
c) No change	d) None of these
Correct answer:	A
Q 8. For the multistage compression with perfect intercooling the work requirement shall be minimum when,	
a)Pressure ratio in each stage are equal	b)Pressure ratio in first stage is greater than second stage
c)Pressure ratio in second stage is double of pressure ratio in first stage	d)None of these
Correct answer:A	
Q 9. **Which of the following is not a positive displacement type compressor**	

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a) Root Blower	b) Screw type compressor
c) Vane blower	d) None of these
Correct answer:D	
Q 10. In vane type compressor the contribution of reversible pressure rise and irreversiblepressure rise is generally in the proportion of	
a) 3 : 1	b) 1 : 3
c) 1 : 1	d) None of these
Correct answer:C	
Q 11. Slip factor for a centrifugal compressor may be given by the ratio of	
a)Actual whirl velocity and ideal whirl velocity	b)Actual tangential velocity and ideal absolute velocity
c)Relative velocity and absolute velocity	d)None of these
Correct answer:A	
Q 12. The index of compression value in case of air compression process of cooled type in centrifugal compressor may	
a) Be equal to adiabatic index	b) Be even less than adiabatic index
c)Be more than from adiabatic index	d)None of these
Correct answer:B	
Q 13.What shall happen to surging if the number of diffuser vanes is increased in a centrifugal compressor	
a) Increases	b) Decreases
c) Remains unchanged Correct answer:A	d) None of these
Q 14.In order to prevent surging due to flow reversal the number of diffuser vanes (*nd*) and thenumber of impeller blades (*ni*) shall be as under in case of centrifugal compressor	
a)*n*d = *n*i	b)*ni<nd*
c)*ni>nd*	d) None of these
Correct answer:C	
Q 15. Which of the following occurs due to stalling?	
a)Reduced stage efficency	b) Increased vibrations
c) Reduced delivery pressure	d) All of these
Correct answer:D	
Q 16. Which of the following refers to centrifugal compressor characteristics	
a)For a given pressure ratio the increase in speed shows increase in flow rate and simultaneous reduction in efficiency	b)For a particular speed of compressor the decrease in mass flow rate is accompanied by increase in pressure ratio.
c)At all speeds the compressor operation is limited by surging and choking at the two ends.	d)All of these
Correct answer:D	
Q 17. Which of the following refers to axial flow compressor characteristics	
a)Flow rate changes too much with increase in	b)Efficiency decreases with decreasing

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pressure ratio at design conditions	flow rate
c)Efficiency increases with decreasing pressure ratio	d)All of these
Correct answer:B	
Q 18The assumption made in two stage compression with intercooler is that	
a) there is no pressure drop in the intercooler	b) the compression in both the cylinders is polytrophic
c) the suction and delivery of air takes place at constant pressure	d)all of the above
Correct answer: D	
Q 19. Starting torque requirements of centrifugal compressor and axial flow compressor can be related as,	
a)*T*centrifugal>*T*axial	b)*T*centrifugal<*T*axial
c)*T*centrifugal = *T*axial	d) None of these
Correct answer:B	
Q 20.The ratio of workdone per cycle to the stroke volume of the compressor is known as	
a) compressor efficiency	b) compression ratio
c) compressor capacity	d) mean effective pressure
Correct answer:D	
Q 21.The type of rotary compressor used in gas turbines, is of	
a) centrifugal type	b) axial flow type
c) radial flow type	d) none of these
Correct answer:C	
Q 22.In the aircraft propellers	
a) the propulsive matter is caused to flow around the propelled body	b) the propulsive matter is ejected from within the propelled body
c) its functioning does not depend upon the presence of air	d) none of the above
Correct answer:B	
Q 23.Which of the following statement is wrong?	
a) The ratio of the volume of free air delivery per stroke to the swept volume of the piston is called volumetric efficiency.	b) The minimum work required for a two stage reciprocating air compressor is double the work required for each stage.
c) n a two stage reciprocating air compressor with complete intercooling, maximum work is saved.	d) none of the above
Correct answer:C	
Q 24.Intercooling in multi-stage compressors is done	
a) to cool the air at delivery	b) to enable compression in two stages
c) to cool the air during compression	d) to minimise the work of compression
Correct answer:D	
Q 25.In a jet propulsion	
a) the propulsive matter is caused to flow around the propelled body	b) the propulsive matter is ejected from within the propelled body
c) its functioning does not depend upon presence	d) none of the above

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of air	
Correct answer:A	
Q 26.Which of the following statement is correct?	
a) The ratio of the discharge pressure to the inlet pressure of air is called compressor efficiency.	b) The compression ratio for the compressor is always greater than unity.
c) During isothermal compression of air, the workdone in a compressor is maximum	d) The compressor capacity is the ratio of workdone per cycle to the stroke volume.
Correct answer:B	
Q 27.In a centrifugal compressor, an increase in speed at a given pressure ratio causes	
a) increase in flow	b) decrease in flow
c) increase in efficiency	d) increase in flow and decrease in efficiency
Correct answer:D	
Q 28.The maximum delivery pressure in a rotary air compressor is	
a)**10bar**	b) 20 bar
c) 30 bar	d) 40 bar
Correct answer:A	
Q 29.Rotary compressors are used for delivering	
a) small quantities of air at low pressures	b Large quantities of air at low pressure
c) small quantities of air at high pressures	d) large quantities of air at high pressures
Correct answer:B	
Q 30.The degree of reaction in an axial flow compressor is defined as the ratio of static enthalpy rise in the	
a) rotor to static enthalpy rise in the stage	b) stator to static enthalpy rise in the rotor
c) rotor to static enthalpy rise in the stator	d) stator to static enthalpy rise in the stage
Correct answer:A	
Q 31.A machine used to raise the pressure of air is called	
a) gas turbine	b) I.C engine
c) compressor	d) air motor
Correct answer:C	
Q 32. In a four stage compressor, if the pressure at the first and third stage are 1 bar and 16 bar, then the delivery pressure at the fourth stage will be	
a)16 bar	b)64 bar
c)256 bar	d)1 bar
Correct answer:b	
Q 33.In a centrifugal compressor, the ratio of the _____ to the blade velocity is called slip factor.	
a) outlet whirl velocity	b) inlet whirl velocity
c) inlet velocity of flow	d) outlet velocity of flow
Correct answer:D	
Q 34. The gas in cooling chamber of a closed cycle gas turbine is cooled at	

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a)constant temperature	b)constant pressure
c)none of these	d)constant volume
Correct answer:b	
Q 35.In a reciprocating air compressor, the compression work per kg of air	
a) increases as clearance volume decreases	b) increases as clearance volume increases
c) decreases as clearance volume increases	d) is independent of clearance volume
Correct answer:D	
Q 36.Gas turbine as compared to steam turbine	
a) has compressor and combustion chamber	b) requires less space for installation
c) has less efficiency	d) all of these
Correct answer:D	
Q 37.The ratio of the volume of free air delivery per stroke to the swept volume of the piston, is known as	
a) volumetric efficiency	b) mechanical efficiency
c) compressor efficiency	d) isothermal efficiency
Correct answer:A	
Q 38.The air is delivered _____ in one revolution in case of a three-lobbed rotor	
a) 2 times	b) 3 times
c) 4 times	d) 6 times
Correct answer:D	
Q 39.The axial flow compressor is preferred in air-craft gas turbines because of	
a) higher thrust	b) low frontal area
c) high pressure rise	d) none of these
Correct answer:C	
Q 40.Only rocket engines can be propelled to space because	
a) these engines can work on several fuels	b) they can generate very high thrust
c) they have high propulsion efficiency	d) they are not air-breathing engines
Correct answer:D	
Q 41.Euler's equation can be used for	
a) pumps	b) axial flow compressors
c) radial flow compressors	d) all of these
Correct answer:D	
Q 42.A closed cycle gas turbine consists of a	
a) cooling chamber	b) heating chamber
c) compressor	d) all of these
Correct answer: D	
Q 43.The thrust of a jet propulsion power unit can be increased by	
a) injecting water into the compressor	b) injecting ammonia into the combustion chamber
c) burning fuel after gas turbine	d) all of these
Correct answer:D	
Q 44. The reason for volumetric efficiency of reciprocating compressor being less than 100 percent is	
a) all of these	b) pressure drop across the valves

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c) superheating in compressor	d) clearance volume and leakages
Correct answer:A	
Q 45.For minimum work required to compress and deliver a quantity of air by multi-stage compression,	
a) the intercooling should be perfect	b) all of the above
c) the workdone in each stage should be same	d) the compression ratio in each stage should be same
Correct answer:B	
Q 46.The volume of air sucked by the compressor during its suction stroke is called	
a) compressor capacity	b) free air delivery
c) swept volume	d) none of these
Correct answer:C	
Q 47.The mean effective pressure of the compressor is the	
a) none of the above	b) actual volume of the air delivered by the compressor when reduced to normal temperature and pressure conditions
c) volume of air delivered by the compressor	d) volume of air sucked by the compressor during its suction stroke
Correct answer:A	
Q 48.When the outlet angle from the rotor of a centrifugal compressor is more than 90°, then the blades are said to be	
a) forward curved none of these	b) backward curved
c) radial	d) none of these
Correct answer:A	
Q 49.The overall isothermal efficiency of the compressor is defined as the ratio of	
a) isentropic power to the power required to drive the compressor	b) volume of free air delivery per stroke to the swept volume of the piston
c) work required to compress the air isothermally to the actual work required to compress the air for the same pressure ratio	d) isothermal power to the shaft power or B.P. of the motor or engine required to drive the compressor
Correct answer:D	
Q 50.The air power of the compressor is also known as	
a) frictional power	b) brake power
c)Indicated power	d) none of these
Correct answer:C	
Q 51.In a centrifugal compressor, the flow of air is _____ to the axis of compressor.	
a) perpendicular	b) inclined
c) none of these	d) parallel
Correct answer:A	
Q 52.Which of the following bladings will give maximum pressure rise in a centrifugal compressor, assuming the same overall dimensions, blade inlet angle and rotational speeds?	
a) Forward curved blades	b) Backward curved blades
c) all of these	d) Radial blades
Correct answer:D	
Q 53.The assumption made in two stage compression with intercooler is that	
a) there is no pressure drop in the intercooler	b) the compression in both the cylinders

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	is polytrophic
c) the suction and delivery of air takes place at constant pressure	d) all of the above
Correct answer:D	
Q 54.In a single stage, single acting reciprocating air compressor, without clearance volume, the work done is minimum during	
a) isentropic compression	b)polytrophic compression
c) Isothermal compression	d) none of these
Correct answer:C	
Q 55.If the flow of air through the compressor is perpendicular to its axis, then it is a	
a) reciprocating compressor	b) centrifugal compressor
c) axial flow compressor	d) turbo compressor
Correct answer:B	
Q 56.The degree of reaction is usually kept _____ for all types of axial flow compressors.	
a) 0.5	b) 0.2
c) 0.4	d) 0.3
Correct answer:A	
Q 57.The volumetric efficiency of a compressor	
a) decreases with decrease in compression ratio	b) increases with increase in compression ratio
c) decreases with increase in compression ratio	d) increases with decrease in compression ratio
Correct answer:C	
Q 58.When air is to be compressed at a high pressure, then it is advantageous to use	
a) multi-stage compression with intercooling	b) single stage compression
c) multi-stage compression without intercooling	d) none of these
Correct answer:A	
Q 59.If the flow of air through the compressor is parallel to its axis, then the compressor is	
a) centrifugal compressor	b) axial flow compressor
c) turbo-compressor	d) reciprocating compressor
Correct answer:B	
Q 60.The multi-stage compression ofair as compared to single stage compression	
a) reduces work done per kg of air	b) improves volumetric efficiency for thegiven pressure ratio
c) gives more uniform torque	d) all of these
Correct answer:D	

QUESTION BANK

Subject: Fluid Mechanics-I

Q 1. Relative density of mercury is	
a) 1	b) 9.8
c) 13.6	d) 1000
Correct answer: C	
Q 2. A Newtonian fluid is defined as the fluid which	
a) Obeys Hook's law	b) Is compressible
c) Obeys Newton's law of viscosity	d) Is incompressible
Correct answer: C	
Q 3. The dynamic viscosity of a liquid is 1.2×10^{-4} Ns/m^2, whereas, the density is 600 kg/m^3. The kinematic viscosity in m^2/s is	
a) 72×10^{-3}	b) 20×10^{-8}
c) 7.2×10^{3}	d) 70×10^{6}
Correct answer: B	
Q 4. The location of the centre of pressure over a surface immersed in a liquid is	
a) always above the centroid	b) will be at the centroid
c) will be below the centroid	d) for higher densities it will be above the centroid and for lower densities it will be below the centroid
Correct answer: C	
Q 5. The continuity equation is the result of application of the following law to the flow field	
a) First law of thermodynamics	b) Conservation of energy
c) Newtons second law of motion	d) Conservation of mass
Correct answer: D	
Q 6. Which fluid does not experience shearing stress during flow?	
a) Pseudoplastic	b) Dilatant
c) Newtonian	d) Inviscid
Correct answer: D	
Q 7. Stress strain relationship for Newtonian fluid is	
a) Parabolic	b) Hyperbolic
c) Linear	d) Inverse type
Correct answer: C	

QUESTION BANK

Subject: Fluid Mechanics-I

Q 8. If cohesion between molecules of a fluid is greater than adhesion between fluid and glass, then the free level of fluid in a dipped glass tube will be	
a) Higher than the surface of liquid	b) The same as the surface of liquid
c) Lower than the surface of liquid	d) Unpredictable
Correct answer: C	
Q 9. Dimensions of surface tension are	
a) $ML°T^{-2}$	b) ML°T
c) $ML\ T^2$	d) ML^2T^2
Correct answer: A	
Q 10. A liquid compressed in cylinder has a volume of 0.04 m^3 at 50 kg/cm^2 and a volume of 0.039 m^3 at 150 kg/cm^2. The bulk modulus of elasticity of liquid is	
a) 400 kg/cm^2	b) 4000 kg/cm^2
c) 40×10^5 kg/cm^2	d) 40×10^6 kg/cm^2
Correct answer: B	
Q 11. The unit of viscosity is	
a) $Meters^2$ per sec	b) kg-sec/meter
c) Newton-sec per $meter^2$	d) Newton-sec per meter
Correct answer:C	
Q 12. A pressure of 25 m of head of water is equal to	
a) 25 kN/m^2	b) 245 kN/m^2
c) 2500 kN/m^2	d) 2.5 kN/m^2
Correct answer: B	
Q 13. Dynamic viscosity of most of the gases with rise in temperature	
a) Increases	b) Decreases
c) Remain unchanged	d) Unpredictable
Correct answer: A	
Q 14. When a body is immersed wholly or partially in a liquid, it is lifted up by a force equal to the weight of liquid displaced by the body. This statement is called	
a) Pascal's law	b) Archimedes’s principle
c) Principle of flotation	d) Bernoulli's theorem
Correct answer: B	
Q 15. The tendency of a liquid surface to contract is due to the following property	
a) Cohesion	b) Adhesion

QUESTION BANK

Subject: Fluid Mechanics-I

c) Viscosity	d) Surface tension
Correct answer: D:	
Q 16. The point in the immersed body through which the resultant pressure of the liquid may be taken to act is known as	
a) Meta center	b) Center of pressure
c) Center of buoyancy	d) Center of gravity
Correct answer: C	
Q 17. The total pressure force on a plane area is equal to the area multiplied by the intensity of pressure at the Centroid, if	
a)\The area is horizontal	b) The area is vertical
c) The area is inclined	d) All of the above
Correct answer: D	
Q 18. Capillary action is due to the	
a) Surface tension	b) Cohesion of the liquid
c) Adhesion of the liquid molecules and the molecules on the surface of a solid	d) All of the above
Correct answer: D	
Q 19. The intensity of pressure on an immersed surface _____ with the increase in depth.	
a) Does not change	b) Increases
c) Decreases	d) None of these
Correct answer: B	
Q 20. One liter of water occupies a volume of	
a) 100 cm^3	b) 250 cm^3
c) 500 cm^3	d) 1000 cm^3
Correct answer: D	
Q 21. What is the correct formula for loss at the exit of a pipe?	
a) $h_L = 0.5 (V^2 / 2g)$	b) $h_L = (V^2 / 2g)$
c) $h_L = (2 V^2 / g)$	d) $h_L = (4 V^2 / g)$
Correct answer: B	
Q 22. Minor losses do not make any serious effect in	
a) short pipes	b) long pipes

c) both the short as well as long pipes	d) cannot say
Correct answer: B	
Q 23. Minor losses occur due to	
a) sudden enlargement in pipe	b) sudden contraction in pipe
c) bends in pipe	d) all of the above
Correct answer: D	
Q 24. What is Darcy-Weisbach formula for heat loss due to friction? Where, f = Darcy's coefficient of friction	
a) $h_f = (f l V^2) / (g d)$	b) $h_f = (f l V^2) / (2 g d)$
c) $h_f = (4 f l V^2) / (2 g d)$	d) $h_f = (16 f l V^2) / (2 g d)$
Correct answer: C	
Q 25. How is the intensity of shear stresses over the boundary layer?	
a) small	b) large
c) sometimes small and sometimes large	d) cannot say
Correct answer: B	
Q 26. The velocity gradients over the boundary layer are	
a) small	b) large
c) sometimes small and sometimes large	d) cannot say
Correct answer: B	
Q 27. If viscosity of fluid is more, the thickness of boundary layer is	
a) more	b) less
c) not affected by change in viscosity	d) unpredictable
Correct answer: A	
Q 28. The region in the turbulent boundary layer zone, adjacent to the solid surface of the plate is called as	
a) laminar sub layer	b) turbulent sub layer
c) solid sub layer	d) solid layer
Correct answer: A	
Q 29. The component of the total force exerted by fluid on a body in the direction parallel to the direction of motion is called as	

QUESTION BANK

Subject: Fluid Mechanics-I

a) lift	b) drag
c) both a. and b.	d) none of the above
Correct answer: B	
Q 30. The sum of components of shear forces in the direction of flow of fluid is called as	
a) shear drag	b) friction drag
c) skin drag	d) all of the above
Correct answer: D	
Q 31. Which of the following quantities has the dimensions [M0 L0 T 0]	
a) Density	b) Stress
c) Strain	d) Strain Rate
Correct answer: C	
Q 32. Which of the following equations is not dimensionally homogeneous? Consider standard symbols for quantities.	
a)(Force) F = m x a	b)(Head Loss due to friction) h_f = (f L V^2) / (2 g d)
c)(Torque) T = F x Distance	d)None of the above
Correct answer:D	
Q 33. Which of the following is a dimensionless equation?	
a) Reynold's equation	b) Euler's equation
c)Weber's equation	d) All of the above
Correct answer:D	
Q 34. Which of the following number is applicable in open hydraulic structure such as spillways, where gravitational force is predominant?	
a)Reynold's Number	b) Euler's Number
c)Weber's Number	d)Froude's Number
Correct answer:D	
Q 35. Square root of the ratio of inertia force to elastic force is called as	
a)Mach's Number	b)Cauchy's Number

c) Both a. and b.	d)None of the above
Correct answer:C	
Q 36. The highest point of syphon is called as	
a) syphon top	b)summit
c) reservoir	d)none of the above
Correct answer:B	
Q 37. The friction factor in fluid flowing through pipe depends upon	
a)Reynold's number	b)relative roughness of pipe surface
c)both a. and b	d)none of the above
Correct answer: C	
Q 38. The head loss through fluid flowing pipe due to friction is	
a) the minor loss	b)the major loss
c) both a. and b.	d)none of the above
Correct answer: B	
Q 39. Friction factor for laminar flow is given by	
a)(Re /64)	b) (64 / Re)
c)(Re / 16)	d)(16 / Re)
Correct answer: B	
Q 40. Magnitude of eddy viscosity for laminar flow is	
a) less than zero	b) zero
c) greater than zero	d)unpredictable
Correct answer: B	
Q 41. The flow of fluid will be laminar when	
a)Reynold's number is less than 2000	b) the density of the fluid is low
c)both a. and b.	d)none of the above
Correct answer: C	
Q 42. The cylindrical portion of short length, which connects converging and diverging section of venturimeter, is called as	

QUESTION BANK

Subject: Fluid Mechanics-I

a) diffuser	b)connector
c) throat	d) manometer tube
Correct answer: C	
Q 43. Venturimeter consists of short converging conical tube which has a total inclination angle of	
a)11 ± 1^o	b)21 ± 1^o
c)30 ± 1^o	d)60 ± 1^o
Correct answer: B	
Q 44. Which of the following devices does not use Bernoulli's equation as its working principle?	
a) Venturimeter	b)Orifice-meter
c)Pitot tube	d)None of the above
Correct answer: D	
Q 45. In a steady, ideal flow of an incompressible fluid, total energy at any point of the fluid is always constant. This theorem is known as	
a) Euler's theorem	b)Navier-stockes theorem
c)Reynold's theorem	d)Bernoulli's theorem
Correct answer: D	
Q 46. The study of force which produces motion in a fluid is called as	
a)fluid statics	b)fluid dynamics
c)fluid kinematics	d)none of the above
Correct answer: B	
Q 47. Viscous forces are not present in	
a) rotational flow	b) irrotational flow
c) laminar flow	d)none of the above
Correct answer: B	
Q 48. Which acceleration has a nonzero value in uniform flow?	
a) Local acceleration	b)Convective acceleration
c)Both local as well as convective acceleration	d)unpredictable

Correct answer: A	
Q 49. If stream function (Ψ) satisfies the Laplace equation, it is a possible case of	
a)a circular flow	b)a rotational flow
c) an irrotational flow	d)none of the above
Correct answer: C	
Q 50. The imaginary line drawn in the fluid in such a way that the tangent to any point gives the direction of motion at the point, is called as	
a)path line	b) streak line
c)filament line	d)stream line
Correct answer: D	
Q 51. The actual path followed by a fluid particle as it moves during a period of time, is called as	
a) path line	b)streak line
c) filament line	d)stream line
Correct answer: A	
Q 52. In which method of describing fluid motion, the observer remains stationary and observes changes in the fluid parameters at a particular point only?	
a)Lagrangian method	b) Eulerian method
c)Stationary method	d)All of the above
Correct answer: B	
Q 53. According to Archimede's principle, if a body is immersed partially or fully in a fluid then the buoyancy force is _____ the weight of fluid displaced by the body.	
a)equal to	b)less than
c)more than	d)unpredictable
Correct answer: A	
Q 54. When the angle between surface tension with the liquid (θ) is greater than 90^{o}, the liquid becomes	
a) flat	b)concave upward
c)convex upward	d)unpredictable
Correct answer:C	
Q 55. Which property of the fluid offers resistance to deformation under the	

QUESTION BANK

Subject: Fluid Mechanics-I

action of shear force?	
a)density	b)viscosity
c)permeability	d)specific gravity
Correct answer: B	
Q 56. The specific weight of the fluid depends upon	
a)gravitational acceleration	b) mass density of the fluid
c)both a. and b	d) none of the above
Correct answer: C	
Q 57. Inter molecular cohesive force in the fluids is	
a) less than that of the solids	b) more than that of the solids
c)equal to that of the solids	d)unpredictable
Correct answer: A	
Q 58. Shear stress in static fluid is	
a)always zero	b)always maximum
c)between zero to maximum	d) unpredictable
Correct answer:A	
Q 59. Which branch of fluid mechanics deals with translation, rotation and deformation of the fluid element without considering the force and energy causing such motion is called as	
a)fluid dynamics	b)fluid kinematics
c) fluid kinetics	d)hydraulics
Correct answer: B	
Q 60. One litre of a certain fluid weighs 8N. What is its specific volume?	
a) 2.03×10^{-3} m^3/kg	b)20.3×10^{-3} m^3/kg
c)12.3×10^{-3} m^3/kg	d)1.23×10^{-3} m^3/kg
Correct answer: D	

QUESTION BANK

Subject: Manufacturing Process-II

Q 1. **Good surface finish and better dimensional accuracy can be achieved in**	
a) cold working process	b) hot working process
c) both a. and b.	d) none of the above
Correct answer:	A
Q 2. **Which of the following options best describes the centre lathes?**	
a) Machining machines	b) Shaping machines
c)Turning machines	d) None of the above
Correct answer:	C
Q 3. **The foundation of the centre lathe is called as**	
a) carriage	b) tray
c) base	d) bed
Correct answer:	D
Q 4. **Which of the following is not a part of carriage of the centre lathe?**	
a) Tool post	b) Apron
c) Compound rest	d) Gear box controls
Correct answer:	D
Q 5. **What is swing over carriage?**	
a) The maximum diameter of workpiece that can be rotated over the bed ways	b) The minimum diameter of workpiece that can be rotated over the bed ways
c) The maximum diameter of workpiece that can be rotated over lathe saddle	d) The minimum diameter of workpiece that can be rotated over lathe saddle
Correct answer:	A
Q 6. **Tool life is measured by the**	
a) Number of pieces machined between tool sharpenings	b) Time the tool is in contact with the job
c) Volume of material removed between tool sharpenings	d) All of the above
Correct answer:	D
Q 7. **A diamond locating pin is used in jigs and fixtures because**	
a) Diamond is very hard and wear resistant	b) It occupies very little space
c) It helps in assembly with tolerance on centre distance	d) It has a long life
Correct answer:	C
Q 8. **Surface grinding is done to produce**	
a) Tapered surface	b) Flat surface
c) Internal cylindrical holes	d) All of these
Correct answer:	B
Q 9. **Relief angles on high speed steel tools usually vary from**	
a) 0° to 3°	b) 3° to 10°
c) 10° to 20°	d) 20° to 30°
Correct answer:	D
Q 10. **The tool material, for faster machining, should have**	
a) Wear resistance	b) Red hardness
c) Toughness	d) All of these
Correct answer:	D

QUESTION BANK

Subject: Manufacturing Process-II

Q 11. **High speed steel cutting tools operate at cutting speeds _____ than carbon steel tools.**	
a) 2 to 3 times lower	b) 2 to 3 times higher
c) 5 to 8 times higher	d) 8 to 20 times higher
Correct answer:	B
Q 12. **In a plain milling machine, the table can be moved**	
a) Longitudinally	b) Crosswise
c) Vertically	d) All of these
Correct answer:	D
Q 13. **Crater wear leads to**	
a) Increase in cutting temperature	b) Weakening of tool
c) Friction and cutting forces	d) All of these
Correct answer:	D
Q 14. **In oblique cutting system, the maximum chip thickness**	
a) Occurs at the middle	b) May not occur at the middle
c) Depends upon the material of the tool	d) Depends upon the geometry of the tool
Correct answer:	B
Q 15. **The rear teeth of a broach**	
a) Perform burnishing operation	b) Remove minimum metal
c) Remove maximum metal	d) Remove no metal
Correct answer:	C
Q 16. **The soft grade grinding wheels are denoted by the letters**	
a) *A* to *H*	b) *I* to *P*
c) *Q* to *Z*	d) *A* to *P*
Correct answer:	A
Q 17. **The actual feed in centerless grinders is given by (where d = Dia. of regulating wheel, n = Revolutions per minute, and α = Angle of inclination of wheel)**	
a) πd	b) πdn
c) $\pi dn \sin\alpha$	d) $\pi dn \cos\alpha$
Correct answer:	C
Q 18. **Small nose radius**	
a) Increases tool life	b) Decreases tool life
c) Produces chipping and decreases tool life	d) Results in excessive stress concentration and greater heat generation
Correct answer:	D
Q 19. **Which of the following statement is correct about EDM machining**	
a) It can machine hardest materials	b) It produces high degree of surface finish
c) The tool and work are never in contact with each other	d) All of these
Correct answer:	D
Q 20. **A tool used to withdraw a drill from the sleeve is called**	
a) Drill remover	b) Drill puller

c) Drift	d) Drill drawer
Correct answer:	C
Q 21. **A taper tap has**	
a) Its end tapered for about three or four threads	b) Its end tapered for about eight or ten threads
c) Full threads for the whole of its length	d) None of the above
Correct answer:	B
Q 22. **The top and sides of the table of a shaper usually have**	
a) L-type slots	b) T-type slots
c) I-type slots	d) Any one of these
Correct answer:	B
Q 23. **The tap used to cut threads in a blind hole is**	
a) Taper tap	b) Second tap
c) Bottoming tap	d) Any one of these
Correct answer:	C
Q 24. **The operation of smoothing and squaring the surface around a hole is known as**	
a) Counter-sinking	b) Counter-boring
c) Trepanning	d) Spot facing
Correct answer:	D
Q 25. **The increase in depth of cut and feed rate _____ surface finish.**	
a) Improves	b) Deteriorates
c) Does not effect	d) None of these
Correct answer:	B
Q 26. **The lathe spindles at the nose end have**	
a) Internal screw threads	b) External screw threads
c) No threads	d) Tapered threads
Correct answer:	B
Q 27. **A coarse grained grinding wheel is used to grind**	
a) Hard and brittle materials	b) Soft and ductile materials
c) Hard and ductile materials	d) Soft and brittle materials
Correct answer:	B
Q 28. **The binding material used in cemented carbide tools is**	
a) Tungsten	b) Chromium
c) Silicon	d) Cobalt
Correct answer:	D
Q 29. **High speed steel tools retain their hardness up to a temperature of**	
a) 250°C	b) 350°C
c) 500°C	d) 900°C
Correct answer:	D
Q 30. **An open structure of a grinding wheel is used for**	
a) Soft materials	b) Tough materials
c) Ductile materials	d) All of these
Correct answer:	D

QUESTION BANK

Subject: Manufacturing Process-II

Q 31. **A drill mainly used in drilling brass, copper or softer materials, is**	
a) Flat drill	b) Straight fluted drill
c) Parallel shank twist drill	d) Tapered shank twist drill
Correct answer:	B
Q 32. **The process of removing metal by a cutter which is rotated in the same direction of travel of workpiece, is called**	
a) Up milling	b) Down milling
c) Face milling	d) End milling
Correct answer:	B
Q 33. **The operation of making a cone-shaped enlargement of the end of a hole is known as**	
a) Counter-sinking	b) Counter-boring
c) Trepanning	d) Spot facing
Correct answer:	A
Q 34. **The cutting tool in a milling machine is mounted on**	
a) Spindle	b) Arbor
c) Column	d) Knee
Correct answer:	B
Q 35. **Gear lapping is an operation**	
a) After heat treatment	b) Prior to heat treatment
c) For gear reconditioning	d) None of these
Correct answer:	A
Q 36. **The different spindle speeds on a lathe form**	
a) Arithmetical progression	b) Geometrical progression
c) Harmonical progression	d) Any one of these
Correct answer:	B
Q 37. **The lathe spindles are usually made hollow and provided with**	
a) Internal taper	b) External taper
c) Internal and external taper	d) No taper
Correct answer:	A
Q 38. **For softer materials, the point angle of the drill is kept**	
a) Equal to 118°	b) Less than 118°
c) More than 118°	d) Any one of these
Correct answer:	B
Q 39. **The method of centre less grinding used to produce taper is**	
a) In-feed grinding	b) Through feed grinding
c) End feed grinding	d) Any one of these
Correct answer:	C
Q 40. **The angle on which the strength of the tool depends is**	
a) Rake angle	b) Cutting angle
c) Clearance angle	d) Lip angle
Correct answer:	A
Q 41. **Thread grinding requires work speed from**	
a) 1 to 3 m/min	b) 5 to 10 m/min
c) 10 to 14 m/min	d) 14 to 20 m/min
Correct answer:	A

QUESTION BANK

Subject: Manufacturing Process-II

Q 42. **The velocity of tool along the tool face is known as**	
a) Shear velocity	b) Chip velocity
c) Cutting velocity	d) Mean velocity
Correct answer:	B
Q 43. **The surface finish is improved by the increase in**	
a) Cutting speed	b) Nose radius
c) True rake angle	d) All of these
Correct answer:	D
Q 44. **In down milling, the thickness of chip is**	
a) Minimum at the beginning of the cut and maximum at the end of the cut	b) Maximum at the beginning of the cut and minimum at the end of the cut
c) Uniform throughout the cut	d) None of these
Correct answer:	B
Q 45. **The chuck used for setting up of heavy and irregular shaped work should be**	
a) Four jaw independent chuck	b) Three jaw universal chuck
c) Magnetic chuck	d) Drill chuck
Correct answer:	A
Q 46. **Ceramic tools are fixed to tool body by**	
a) Soldering	b) Brazing
c) Welding	d) Clamping
Correct answer:	B
Q 47. **The helix angle of a drill is _____ for drilling brass.**	
a) Equal to 30°	b) Less than 30°
c) More than 30°	d) None of these
Correct answer:	B
Q 48. **The type of reamer used for reaming soft aluminium or copper, is**	
a) Straight fluted reamer	b) Left hand spiral fluted reamer
c) Right hand spiral fluted reamer	d) Any one of these
Correct answer:	B
Q 49. **In which of the following machine, the work remains stationary and the tool is rotated?**	
a) Vertical boring machine	b) Horizontal boring machine
c) Precision boring machine	d) Jig boring machine
Correct answer:	B
Q 50. **A mandrel is used to hold**	
a) An eccentric work	b) A heavy work
c) A thin work	d) None of these
Correct answer:	D
Q 51. **A single point tool has**	
a) Rake angle	b) Cutting angle
c) Lip angle	d) All of these
Correct answer:	D
Q 52. **When the tool moves parallel to the lathe axis, the movement is termed as**	
a) Cross feed	b) Angular feed
c) Longitudinal feed	d) Any one of these

QUESTION BANK

Subject: Manufacturing Process-II

Correct answer:	C
Q 53. **The grade of grinding wheel depends upon**	
a) Hardness of the material being ground	b) Speed of wheel and work
c) Condition of grinding machine	d) All of these
Correct answer:	D
Q 54. **In electro discharge machining, tool is made of**	
a) Brass	b) Copper
c) Copper tungsten alloy	d) All of these
Correct answer:	D
Q 55. **Tool life is generally better when**	
a) Grain size of the metal is large	b) Grain size of the metal is small
c) Hard constituents are present in the micro-structure of the tool material	d) None of the above
Correct answer:	A
Q 56. **The cutting angle of a flat drill varies from**	
a) 3° to 8°	b) 20° to 30°
c) 60° to 90°	d) 90° to 120°
Correct answer:	D
Q 57. **Discontinuous chips are formed during machining of**	
a) Brittle metals	b) Ductile metals
c) Hard metals	d) Soft metals
Correct answer:	A
Q 58. **As the cutting speed increases, the tool cutting forces**	
a) Remain constant	b) Increases
c) Decreases	d) First increases and then decreases
Correct answer:	C
Q 59. **Soft materials cannot be economically ground due to**	
a) High temperature involved	b) Frequent wheel clogging
c) Rapid wheel wear	d) Low work piece stiffness
Correct answer:	B
Q 60. **In which of the following machine, the work is usually rotated while the drill is fed into work?**	
a) Sensitive drilling machine	b) Radial drilling machine
c) Gang drilling machine	d) Deep hole drilling machine
Correct answer:	D

QUESTION BANK

Subject: Strength of Material-II

Q 1. **1. Strain energy is the**	
a) energy stored in a body when strained within elastic limits	b) energy stored in a body when strained upto the breaking of a specimen
c) maximum strain energy which can be stored in a body	d) proof resilience per unit volume of a material
Correct answer: **Answer: A**	
Q 2. **. A vertical column has two moments of inertia (i.e. Ixx and Iyy). The column will tend to buckle in the direction of the**	
a) axis of load	b) perpendicular to the axis of load
c) maximum moment of inertia	d) minimum moment of inertia
Correct answer: **D**	
Q 3. **The neutral axis of the cross-section a beam is that axis at which the bending stress is**	
a) zero	b) minimum
c) maximum	d) infinity
Correct answer: **A**	
Q 4. **Euler's formula holds good only for**	
a) short columns	b) long columns
c) both short and long columns	d) weak columns
Correct answer:B	
Q 5. **The object of caulking in a riveted joint is to make the joint**	
a) free from corrosion	b) stronger in tension
c) free from stresses	d) leak-proof

QUESTION BANK

Subject: Strength of Material-II

Correct answer:D	
Q 6. **A steel bar of 5 mm is heated from 15° C to 40° C and it is free to expand. The bar Will induce**	
a) no stress	b) shear stress
c) tensile stress	d) compressive stress
Correct answer:A	
Q 7. **A body is subjected to a tensile stress of 1200 MPa on one plane and another tensile stress of 600 MPa on a plane at right angles to the former. It is also subjected to a shear stress of 400 MPa on the same planes. The maximum normal stress will be**	
a) 400 MPa	b) 500 MPa
c) 900 MPa	d) 1400 MPa
Correct answer: : **D**	
Q 8. **A thick cylindrical shell having ro and ri as outer and inner radii, is subjected to an internal pressure (p). The maximum tangential stress at the inner surface of the shell is**	
a) $\frac{p\,(r_o^2 + r_i^2)}{r_o^2 - r_i^2}$	b) $\frac{p\,(r_o^2 - r_i^2)}{r_o^2 + r_i^2}$
c) $\frac{2pr_i^2}{r_o^2 - r_i^2}$	d) $\frac{r_o^2 - r_i^2}{2pr_i^2}$
Correct answer:A	
Q 9. **The stress induced in a body, when suddenly loaded, is _____ the stress induced when the same load is applied gradually.**	
a) . equal to	b) one-half
c) twice	d) . four times
Correct answer:C	
Q 10. **The maximum diameter of the hole that can be punched from a plate of maximum shear stress 1/4th of its**	

QUESTION BANK

Subject: Strength of Material-II

maximum crushing stress of punch, is equal to (where t = Thickness of the plate)	
a) . t	b) 2t
c) 4t	d) 8t
Correct answer: **C**	
Q 11. **Two closely coiled helical springs 'A' and 'B' are equal in all respects but the number of turns of spring 'A' is half that of spring 'B' The ratio of deflections in spring 'A' to spring 'B' is**	
a) 1/8	b) 1/4
c) 1/2	d) 2
Correct answer:C	
Q 12. **The deformation per unit length is called**	
a) tensile stress	b) compressive stress
c) shear stress	d) strain
Correct answer:D	
Q 13. **In the torsion equation** $\frac{T}{J} = \frac{\tau}{R} = \frac{C\theta}{l}$ **the term J/R is called**	
a) shear modulus	b) section modulus
c) polar modulus	d) none of these
Correct answer:C	
Q 14. **Strain resetters are used to**	
a) measure shear strain	b) measure linear strain
c) measure volumetric strain	d) relieve strain
Correct answer:B	
Q 15. . **The torque transmitted by a solid shaft of diameter (D) is (where τ = Maximum allowable shear stress)**	

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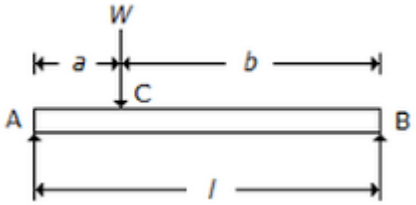
a) $\frac{\pi}{4} \times \tau \times D^3$	b) $\frac{\pi}{16} \times \tau \times D^3$
c) $\frac{\pi}{32} \times \tau \times D^3$	d) $\frac{\pi}{64} \times \tau \times D^3$
Correct answer:B	
Q 16. **When a rectangular beam is loaded transversely, the maximum compressive stress is developed on the**	
a) top layer	b) bottom layer
c) . neutral axis	d) every cross-section
Correct answer:B	
Q 17. **. For a beam, as shown in the below figure, when the load W is applied in the centre of the beam, the maximum deflection is** 	
a) $\frac{Wl^3}{48\,EI}$	b) $\frac{5\,Wl^3}{384\,EI}$
c) $\frac{Wl^3}{192\,EI}$	d) $\frac{Wl^3}{384\,EI}$
Correct answer:A	
Q 18. **The point of contraflexure is a point where**	
a) shear force changes sign	b) bending moment changes sign
c) shear force is maximum	d) bending moment is maximum
Correct answer:B	
Q 19. **The simply supported beam 'A' of length l carries a central point load W. Another beam 'B' is loaded with a**	

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uniformly distributed load such that the total load on the beam is W. The ratio of maximum deflections between beams A and B is	
a) 5/8	b) 8/5
c) . 5/4	d) 4/5
Correct answer:B	
Q 20. **The maximum stress produced in a bar of tapering section is at**	
a) smaller end	b) larger end
c) middle	d) anywhere
Correct answer:A	
Q 21. **The energy stored in a body when strained within elastic limit is known as**	
a) resilience	b) proof resilience
c) strain energy	d) impact energy
Correct answer:C	
Q 22. **In compression test, the fracture in cast iron specimen would occur along**	
a) the axis of load	b) an oblique plane
c) at right angles to the axis of specimen	d) would not occur
Correct answer:B	
Q 23. **. When shear force at a point is zero, then bending moment is _____ at that point.**	
a) zero	b) minimum
c) maximum	d) infinity
Correct answer:C	
Q 24. **If the depth is kept constant for a beam of uniform strength, then its width will vary in proportional to (where M = Bending moment)**	
a)M	b)M/2

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c)M^2	d)M^3
Correct answer:A	
Q 25. **A concentrated load is one which**	
a) acts at a point on a beam	b) varies uniformly over the whole length of a beam
c) spreads uniformly over the whole length of a beam	d) spreads non-uniformly over the whole length of a beam
Correct answer:A	
Q 26. **If the tearing efficiency of a riveted joint is 50%, then ratio of rivet hole diameter to the pitch of rivets is**	
a) 0.20	b) 0.30
c) 0.50	d) 0.60
Correct answer:C	
Q 27. **The rectangular beam 'A' has length l, width b and depth d. Another beam 'B' has the same length and depth but width is double that of 'A'. The elastic strength of beam 'B' will be _____ as compared to beam A.**	
a) same	b) double
c) four times	d) six times
Correct answer:B	
Q 28. **In a simple bending of beams, the stress in the beam varies**	
a) linearly	b) parabolically
c) hyperbolically	d) elliptically
Correct answer:A	
Q 29. **The stress at which the extension of the material takes place more quickly as compared to the increase in load, is called**	

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a) elastic limit	b) yield point
c) ultimate point	d) breaking point
Correct answer:B	
Q 30. **The strain energy stored in a solid circular shaft subjected to shear stress (τ) is (where C = Modulus of rigidity for the shaft material)**	
a) $\frac{\tau}{2C}$ x Volume of shaft	b) $\frac{\tau^2}{2C}$ x Volume of shaft
c) $\frac{\tau}{4C}$ x Volume of shaft	d) $\frac{\tau^2}{4C}$ x Volume of shaft
Correct answer:D	
Q 31. **. Whenever a material is loaded within elastic limit, stress is _____ strain.**	
a) equal to	b) directly proportional to
c) inversely proportional to	d) non linear
Correct answer:B	
Q 32. **Which of the following statement is correct?**	
a) The energy stored in a body, when strained within elastic limit is known as strain energy.	b) The maximum strain energy which can be stored in a body is termed as proof resilience.
c) The proof resilience per unit volume of a material is known as modulus of resilience.	d) all of the above
Correct answer:D	
Q 33. **The maximum tangential stress in a thick cylindrical shell is always _____ the internal pressure acting on the shell.**	
a) equal to	b) less than
c) greater than	d) not dependent

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Correct answer:C	
Q 34. **A thin spherical shell of diameter (d) and thickness (t) is subjected to an internal pressure (p). The stress in the shell material is**	
a) pd/t	b) pd/2t
c) pd/4t	d) pd/8t
Correct answer:C	
Q 35. **Principle plane is a plane on which the shear stress is**	
a) zero	b) minimum
c) maximum	d) not dependent
Correct answer:A	
Q 36. **When a thin cylindrical shell is subjected to an internal pressure, there will be**	
a) a decrease in diameter and length of the shell	b) an increase in diameter and decrease in length of the shell
c) a decrease in diameter and increase in length of the shell	d) an increase in diameter and length of the shell
Correct answer:D	
Q 37. **The point of contraflexure occurs in**	
a) cantilever beams	b) simply supported beams
c) overhanging beams	d) fixed beams
Correct answer:C	
Q 38. **A beam of uniform strength has**	
a) same cross-section throughout the beam	b) same bending stress at every section
c) same bending moment at every section	d) same shear stress at every section
Correct answer:B	

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Q 39. **In a simple bending theory, one of the assumption is that the material of the beam is isotropic. This assumption means that the**	
a) normal stress remains constant in all directions	b) normal stress varies linearly in the material
c) elastic constants are same in all the directions	d) elastic constants varies linearly in the material
Correct answer:C	
Q 40. **The polar modulus for a solid shaft of diameter (D) is**	
a) $wl/2$	b) wl
c) $wl^2/2$	d) $wl^2/6$
Correct answer:B	
Q 41. **In a simple bending theory, one of the assumption is that the material of the beam is isotropic. This assumption means that the**	
a) normal stress remains constant in all directions	b) normal stress varies linearly in the material
c) elastic constants are same in all the directions	d) elastic constants varies linearly in the material
Correct answer:C	
Q 42. **The polar modulus for a solid shaft of diameter (D) is**	
a) $\frac{\pi D^2}{4}$	b) $\frac{\pi D^3}{16}$

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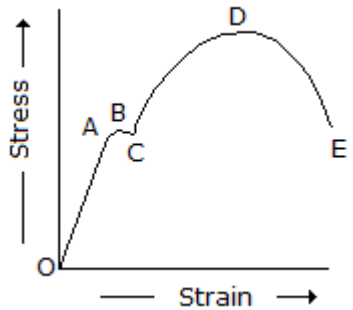
c) $\frac{\pi D^3}{32}$	d) $\frac{\pi D^4}{64}$
Correct answer:B	
Q 43. **Two shafts 'A' and 'B' are made of same material. The shaft 'A' is solid and has diameter D. The shaft 'B' is hollow with outer diameter D and inner diameter D/2. The strength of hollow shaft in torsion is _____ as that of solid shaft.**	
a) 1/16	b) 1/8
c) 1/4	d) 15/16
Correct answer:D	
Q 44. **The bending moment of a cantilever beam of length l and carrying a gradually varying load from zero at free end and w per unit length at the fixed end is _____ at the fixed end.**	
a) wl/2	b) wl
c) wl2/2	d) wl2/6
Correct answer:D	
 Q 45. **In the below figure, the stress corresponding to point D is**	
a) yield point stress	b) breaking stress
c) ultimate stress	d) elastic limit
Correct answer:C	
Q 46. **The Rankine's theory for active earth pressure is based on the assumption that**	

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a) the retained material is homogeneous and cohesionless	b) the frictional resistance between the retaining wall and the retained material is neglected
c) the failure of the retained material takes place along a plane called rupture plane	d) all of the above
Correct answer:D	
Q 47. **The strain energy stored in a spring, when subjected to maximum load, without suffering permanent distortion, is known as**	
a) impact energy	b) proof resilience
c) proof stress	d) modulus of resilience
Correct answer:B	
Q 48. **The resultant stress on an inclined plane which is inclined at an angle θ to the normal cross-section of a body which is subjected to a direct tensile stress (σ) in one plane, is**	
a) σ sin θ	b) σ cos θ
c) σ sin 2θ	d) σ cos 2θ
Correct answer:B	
Q 49. **In a beam where shear force changes sign, the bending moment will be**	
a) zero	b) minimum
c) maximum	d) infinity
Correct answer:C	
Q 50. **For the beam shown in the below figure, the shear force at A is equal**	

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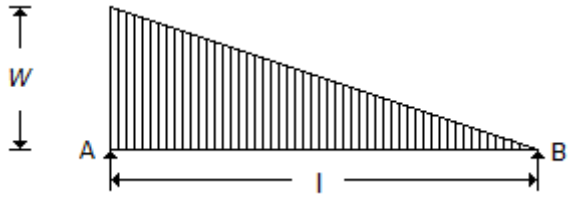

to

a) wl/6	b) wl/3
c) wl	d) 2 wl/3
Correct answer:B	

Q 51. **When a closely-coiled helical spring is subjected to an axial load, it is said to be under**

a) bending	b) shear
c) torsion	d) crushing
Correct answer:C	

Q 52. **According to Euler's column theory, the crippling load for a column of length (l) with one end fixed and the other end free is _____ the crippling load for a similar column hinged at both the ends.**

a) equal to	b) less than
c) more than	d) not depend
Correct answer:B	

Q 53. A helical spring has N turns of coil diameter D and a second spring made of same wire diameter and of same material , has N/2 turns of coil of diameter 2D .if the stiffness of the first spring is k then the stiffness of the second spring will be

a). k/4	b) k/2
c). 2k	d) 4k
Correct answer: A	

Q 54. The maximum shear stress occurs on the outermost fibers of a circular shaft under torsion in a close coiled spring , the maximum shear occurs on the

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a) outermost fibres	b) fibres at mean diameter
c) innermost fibres	d) end coil
Q 55. A bar of length L and of uniform cross sectional area A and second moment of area l is subjected to a pull P if youngs modulus of elasticity of the bar material is E , the expression for strain enegy stored in the bar will be	
a) p^2 L/2AE	b) $PL^2/2AE$
c) PL^2/AE	d) p^2L/AE
Correct answer: A	
Q 56. Consider the following statements at given point in the case of thick cylinder subjected to fluid pressure : (1) Radial stress is compressive (2) Hoop stress is tensile (3) Hoop stress is compressive (4) longitudinal stress in tensile and it varies along the length (5)longitudinal stress is tensile and remain constant along the length of the cylinder which of the statement given above are correct	
a) Only 1,2and 4	b) Only 3 and 4
c) Only 1,2 and 5	d) Only 1,3 and 5
Correct answer: c	
Q 57. What is the strain energy stored in a body of volume V with stress σ due to gradually applied load ?	
a) σE / V	b) $\sigma E^2/v$
c) $\sigma V^2/E$	d) $\sigma^2 v/2E$

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Correct answer: D	
Q 58. In a thick cylinder pressurized from inside the hoop stress is maximum at	
a) the centre of the wall thickness	b) the outer radius
c) the inner radius	d) both the inner and the outer radii
Correct answer: c	
Q 59.	
a)	b)
c)	d)
Correct answer:	
Q 60.	
a)	b)
c)	d)
Correct answer:	

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Q 1. The primary unbalanced force due to inertia of reciprocating parts in a reciprocating engine is given by (where m = Mass of reciprocating parts, ω = Angular speed of crank, r = Radius of crank, θ = Angle of inclination of crank with the line of stroke, and n = Ratio of the length of connecting rod to radius of crank)	
a) $m.\omega^2.r \sin\theta$	b) $m.\omega^2.r \cos\theta$
c) $m.\omega^2.r (\sin 2\theta/n)$	d) $m.\omega^2.r (\cos 2\theta/n)$
Correct answer: B	
Q 2. The steering of a ship means	
a) Movement of a complete ship up and down in vertical plane about transverse axis	b) Turning of a complete ship in a curve towards right or left, while it moves forward
c) Rolling of a complete ship sideways	d) None of the above
Correct answer: B	
Q 3. The secondary unbalanced force is maximum when the angle of inclination of the crank with the line of stroke is	
a) 0° and 90°	b) 180° and 360°
c) Both (A) and (B)	d) None of these
Correct answer: C	
Q 4. Which of the following statement is correct?	
a) For constant velocity ratio transmission between two gears, the common normal at the point of contact must always pass through a fixed point on the line joining the centers of rotation of gears	b) For involute gears, the pressure angle changes with the change in center distance between gears
c) The epicyclic gear trains involve rotation of at least one gear axis about some other gear axis.	d) All of the above
Correct answer: D	

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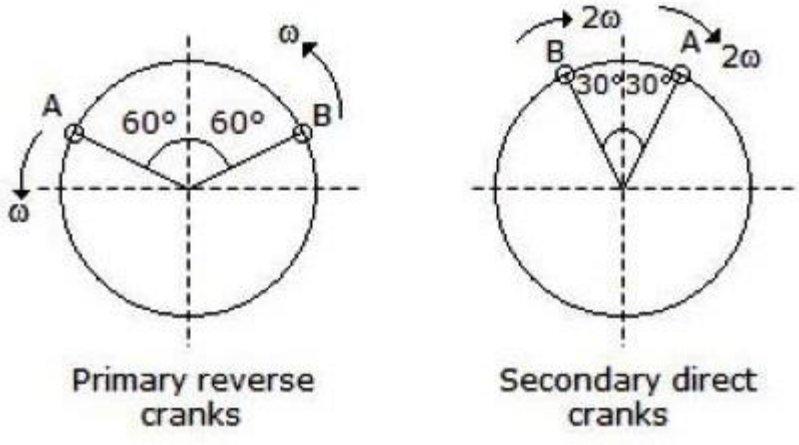
Q 5. The tractive force in a locomotive with two cylinders is given by (where c = Fraction of reciprocating parts per cylinder, m = Mass of reciprocating parts, ω = Angular speed of crank, r = Radius of crank, and θ = Angle of inclination of crank to the line of stroke)	
a) $m.\omega^2.r\ \cos\theta$	b) $c.m.\omega^2.r\ \sin\theta$
c) $(1 - c).m.\omega^2.r\ (\cos\theta - \sin\theta)$	d) $m.\omega^2.r\ (\cos\theta - \sin\theta)$
Correct answer: C	
Q 6. The working depth of a gear is the radial distance from the	
a) Pitch circle to the bottom of a tooth	b) Pitch circle to the top of a tooth
c) Top of a tooth to the bottom of a tooth	d) Addendum circle to the clearance circle
Correct answer: D	
Q 7. Crowning on pulleys helps	
a) In increasing velocity ratio	b) In decreasing the slip of the belt
c) For automatic adjustment of belt position so that belt runs centrally	d) Increase belt and pulley life
Correct answer: C	
Q 8. For a twin cylinder V-engine, the crank positions for primary reverse cranks and secondary direct cranks are shown in the below figure. The engine is a	
a) 30° V-engine	b) 60° V-engine



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c) 120° V-engine	d) 150° V-engine
Correct answer: A	
Q 9. Which of the following statement is correct?	
a) The primary unbalanced force is less than the secondary unbalanced force	b) The primary unbalanced force is maximum twice in one revolution of the crank
c) The unbalanced force due to reciprocating masses varies in magnitude and direction both	d) The magnitude of swaying couple in locomotives is inversely proportional to the distance between the two cylinder center line
Correct answer: B	
Q 10. In automobiles the power is transmitted from gear box to differential through	
a) Bevel gear	b) Universal joint
c) Hooke's joint	d) Knuckle join
Correct answer: C	
Q 11. The swaying couple is maximum or minimum when the angle of inclination of the crank to the line of stroke (θ) is equal to	
a) 90° and 180°	b) 45° and 225°
c) 180° and 270°	d) 270° and 360°
Correct answer: B	
Q 12. The velocity of piston in a reciprocating steam engine is given by (where ω = Angular velocity of crank, r = Radius of crank pin circle, θ = Angle turned by crank from inner dead center, andn = Ratio of length of connecting rod to the radius of crank)	
a)ωr [sin θ + (sin 2θ/n)]	b)ωr [cos θ + (cos 2θ/n)]
c) $\omega^2 r$ [sin θ + (sin 2θ/n)]	d) $\omega^2 r$ [cos θ + (cos 2θ/n)]
Correct answer: A	

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Q 13. The Ackerman steering gear mechanism is preferred to the Davis steering gear mechanism, because	
a) Whole of the mechanism in the Ackerman steering gear is on the back of the front wheels	b)The Ackerman steering gear consists of turning pairs
c)The Ackerman steering gear is most economical	d)Both (A) and (B)
Correct answer: D	
Q 14. Spur gear design normally begins with selecting this:	
a)Rack size	b)Tooth size
c)Gear size	d)Pitch diameter
Correct answer: D	
Q 14. The most common geometric form used in gears today is this:	
a)Involute profile	b)Convolute profie
c)Base circle	d)Spur circle
Correct answer: A	
Q 16. Gear teeth formed on a flat surface are called this:	
a)Pinion	b)Rack
c)Spur	d)Teeth
Correct answer: B	
Q 17. The Hooke's joint consists of:	
a)Two forks	b)One fork
c)Three forks	d)Four forks
Correct answer:A	
Q 18. A system of masses rotating in different parallel planes is in dynamic balance if the	
a)Resultant force is equal to zero	b) Resultant couple is equal to zero
c)Resultant force and resultant couple are both equal to zero	d) Resultant force is numerically equal to the resultant couple, but neither of them need necessarily be zero

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Correct answer:C	
Q 19. Inertia force acts	
a) Perpendicular to the acceleration force	b) Along the direction of acceleration force
c) Opposite to the direction of acceleration force	d) None of the above
Correct answer:C	
Q 20. The axis of precession is _____ to the plane in which the axis of spin is going to rotate.	
a) Parallel	b) Perpendicular
c) Both A and B	d) None of these
Correct answer: B	
Q 21. A disc spinning on its axis at 20 rad/s will undergo precession when a torque 100 N-m is applied about an axis normal to it at an angular speed, if mass moment of inertia of the disc is the 1 kg-m^2	
a) 2rad/s	b) 5rad/s
c)10rad/s	d) 20rad/s
Correct answer: B	
Q 22. The engine of an aeroplane rotates in clockwise direction when seen from the tail end and the aeroplane takes a turn to the left. The effect of the gyroscopic couple on the aeroplane will be	
a) to raise the nose and dip the tail	b) to dip the nose and raise the tail
c) to raise the nose and tail	d) to dip the nose and tail
Correct answer: A	
Q 23. The air screw of an aeroplane is rotating clockwise when looking from the front. If it makes a left turn, the gyroscopic effect will	
a) tend to depress the nose and raise the tail	b) tend to raise the nose and depress the tail
c) tilt the aeroplane	d) none of the above

Correct answer: B	
Q 24. The rotor of a ship rotates in clockwise direction when viewed from the stern and the ship takes a left turn. The effect of the gyroscopic couple acting on it will be	
a) to raise the bow and stern	b) to lower the bow and stern
c) to raise the bow and lower the stern	d) to lower the bow and raise the stern
Correct answer: C	
Q 25. In an automobile, if the vehicle makes a left turn, the gyroscopic torque	
a) increases the forces on the outer wheels	b) decreases the forces on the outer wheels
c) does not affect the forces on the outer wheels	d) none of the above
Correct answer: A	
Q 26. A motor car moving at a certain speed takes a left turn in a curved path. If the engine rotates in the same direction as that of wheels, then due to the centrifugal forces	
a) the reaction on the inner wheels increases and on the outer wheels decreases	b) the reaction on the outer wheels increases and on the inner wheels decreases
c) the reaction on the front wheels increases and on the rear wheels decreases	d) the reaction on the rear wheels increases and on the front wheels decreases
Correct answer: B	
Q 27. When the crank is at the inner dead centre, in a horizontal reciprocating steam engine, then the velocity of the piston will be	
a)Mean	b)Minimum
c)Maximum	d)Zero
Correct answer: D	
Q 28. A rigid body, under the action of external forces, can be replaced by two masses placed at a fixed distance apart. The two masses form an equivalent dynamical system, if	
a) the sum of two masses is equal to the total mass of the body	b) the centre of gravity of the two masses coincides with that of the body
c) the sum of mass moment of inertia of the masses about their centre of gravity is equal to the mass	d) all of the above

moment of inertia of the body	
Correct answer: D	
Q 29. In an engine, the work done by inertia forces in a cycle is	
a)Positive	b)Zero
c)Negative	d)None of these
Correct answer :A	
Q 30. The analysis of mechanism deals with	
a) the determination of input and output angles of a mechanism	b) the determination of dimensions of the links in a mechanism
c) the determination of displacement, velocity and acceleration of the links in a mechanism	d) none of the above
Correct answer: C	
Q 31. The synthesis of mechanism deals with	
a)the determination of input and output angles of a mechanism	b)the determination of dimensions of the links in a mechanism
c)the determination of displacement, velocity and acceleration of the links in a mechanism	d)none of the above
Correct answer: B	
Q 32. The three precision points in the range $1 \leq x \leq 3$ are	
a)1.1, 2, 2.6	b)1.6, 2.5, 2.95
c)1.134, 2, 2.866	d)1.341, 2 , 2.686
Correct answer:	
Q 33. In a simple gear train, if the number of idle gears is odd, then the motion of driven gear will	
a)be same as that of driving gear	b)be opposite as that of driving gear
c)depend upon the number of teeth on the driving gear	d)none of the above
Correct answer: A	
Q 34. The train value of a gear train is	
a)equal to velocity ratio of a gear train	b)reciprocal of velocity ratio of a gear train

c)always greater than unity	d) always less than unity
Correct answer: B	
Q 35. When the axes of first and last gear are co-axial, then gear train is known as	
a)simple gear train	b)compound gear train
c)reverted gear train	d)epicyclic gear train
Correct answer: C	
Q 36. In a clock mechanism, the gear train used to connect minute hand to hour hand, is	
a) epicyclic gear train	b)reverted gear train
c)compound gear train	d)simple gear train
Correct answer: B	
Q 37. In a gear train, when the axes of the shafts, over which the gears are mounted, move relative to a fixed axis, is called	
a) Simple gear train	b)reverted gear train
c)compound gear train	d)epicyclic gear train
Correct answer: D	
Q 38. For static balancing of a shaft,	
a)the net dynamic force acting on the shaft is equal to zero	b)the net couple due to the dynamic forces acting on the shaft is equal to zero
c) both (a) and (b)	d)none of the above
Correct answer :A	
Q 39. For dynamic balancing of a shaft,	
a)the net dynamic force acting on the shaft is equal to zero	b)the net couple due to dynamic forces acting on the shaft is equal to zero
c)both (*a*) and (*b*)	d)none of the above
Correct answer: C	
Q 40. In order to have a complete balance of the several revolving masses in different planes	
a)the resultant force must be zero	b)the resultant couple must be zero
c)both the resultant force and couple must be	d)none of the above

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zero	
Correct answer: C	
Q 41. A fixed gear having 200 teeth is in mesh with another gear having 50 teeth. The two gears are connected by an arm. The number of turns made by the smaller gear for one revolution of arm about the centre of bigger gear is	
a) 2	b) 4
c) 3	d) None of the above
Correct answer: b	
Q 42. Which gear is used for connecting two coplanar and intersecting shafts?	
a) Spur gear	b) Helical gear
c) Bevel gear	d) None of the above
Correct answer: C	
Q 43. Module of a gear is	
a) D/T	b) T/D
c) 2D/T	d) 2T/D
Correct answer: a	
Q 44. Length of arc of contact is given by	
a) Arc of approach – Arc of recess	b) Arc of approach + Arc of recess
c) Arc of approach / Arc of recess	d) Arc of approach x Arc of recess
Correct answer: b	
Q 45. In which of the following type of gear train the first gear and the last gear are co-axial.	
a) a. Simple gear train	b) Compound gear train
c) Reverted gear train	d) None of the above
Correct answer: c	
Q 46. Which type of gear train is used in clock mechanism to join hour hand and minute hand?	
a) Simple gear train	b) Compound gear train

c) Reverted gear train	d) Epicyclic gear train
Correct answer: d	
Q 47. The method of direct and reverse cranks is used in engines for	
a) the control of speed fluctuations	b) balancing of forces and couples
c) kinematic analysis	d) vibration analysis
Correct answer: b	
Q 48. Whirling speed of the shaft is the speed at which	
a) . Shaft tends to vibrate in longitudinal direction	b) torsional vibrations occur
c) shaft tends to vibrate vigorously in transverse direction	d) combination of transverse and longitudinal vibration occurs
Correct answer: C	
Q 49. Hammer blow	
a) is the maximum horizontal unbalanced force caused by the mass provided to balance the reciprocating masses.	b) is the maximum vertical unbalanced force caused by the mass added to balance the reciprocating masses
c) varies as the square root of the speed	d) varies inversely with the square of the speed
Correct answer: b	
Q 50. The balancing weights are introduced in planes parallel to the plane of rotation of the disturbing mass. To obtain complete dynamic balance, the minimum number of balancing weights to be introduced in different planes is	
a) 1	b) 2
c) 3	d) 4
Correct answer: 2	
Q 51. Minimum number of teeth for involute rack and pinion arrangement for pressure angle of 20° is	
a) 18	b) 20
c) 30	d) 34
Correct answer: a	
Q 52. In order to have a complete balance of the several revolving masses in different planes	
a) The resultant couple must be zero	b) The resultant force must be zero
c) Both the resultant force and resultant	d) None of the above

Correct answer: C	
Q 53**.** The resultant unbalanced force is minimum in reciprocating engines when the part of the reciprocating mass balanced by rotating masses is	
a)1/3	b) 1/2
c) 2/3	d) 3/4
Correct answer: b	
Q 54. Hammer blow in locomotive results in	
a) Pulsating torque	b) Tendency to lift the wheels from rail
c) Uneven speed	d) Variable horizontal force
Correct answer: b	
Q 55. In a gear train, when the axes of the shafts over which gears are mounted, move relative to a fixed axis, is called	
a) Simple gear train	b) Compound gear train
c) Reverted gear train	d) Epicyclic gear train
Correct answer: d	
Q 56. A flywheel is a device which controls	
a) the mean speed of rotation of the engine shaft over a long period of time	b) the speed variation caused by cyclic fluctuation of energy
c) the fluctuation of energy over a long period	d) the fuel supply to control the mean speed of the engine shaft
Correct answer: b	
Q 57. According to D' Alembert's principle, the body is in equilibrium position if	
a) inertia force is applied in the direction opposite to the resultant force	b) inertia force is applied in the same direction of the resultant force
c) both a. and b.	d) none of the above
Correct answer: a	
Q 58. What are crank effort diagrams?	
a) Turning moment diagram is drawn on cartesian co-ordinates	b) Turning moment diagram is drawn on polar co-ordinates
c) Turning moment (T) is plotted against	d) All of the above

crank angle θ for various crank positions	
Correct answer: C	
Q 59. Gyroscopic effect is not observed in which of the following actions performed by the ships?	
a) Rolling	b) Pitching
c) Steering	d) All of the above
Correct answer: a	
Q 60. What is meant by pitching of ship?	
a) up and down motion of bow and stern along transverse axis	b) up and down motion of bow and stern along longitudinal axis
c) up and down motion of port and starboard along transverse axis	d) none of the above
Correct answer: a	

QUESTION BANK

Subject: AUTOMOBILE ENGG.

Q 1. The auto ignition in a spark ignition engine means	
a) Automatic ignition of the charge at the end of compression	b) Ignition induced by the passage of a spark
c) Ignition of the charge before the passage of flame front	d) Ignition induced to supplement the process of normal combustion
Correct answer: c	
Q 2. The calorific value of petrol is about	
a) 36.5-38.5 MJ/kg	b) 39.4-42.5 MJ/kg
c) 45.5-47 MJ/kg	d) 45.5-47 MJ/kg
Correct answer: c	
Q 3. The coefficient of friction for the clutch facing is approximately	
a) 0.1	b) 0.4
c) Absolute positioning	d) 1.2
Correct answer: b	
Q 4. The tool of an NC machine has to move along a circular arc from (5, 5) to (10, 10) while performing an operation. The center of the arc is at (10, 5). Which one of the following NC tool path commands performs the above mentioned operation?	
a) R	b) $2R$
c) $4R$	d) $4R^2$
Correct answer: c	
Q 5. The stroke of an engine is the	
a) Volume of the cylinder	b) Length of the connecting rod
c) Internal diameter of the cylinder	d) Distance between T.D.C. and B.D.C.
Correct answer: d	
Q6. The braking control type traction control system (TCS) generally operates in the speed range of.	
a) Less than 20 kmph	b) Less than 40 kmph
c) Less than 60 kmph	d) More than 60 kmph
Correct answer: b	
Q7. The function of a first compression ring (top ring) is that it	

QUESTION BANK

Subject: AUTOMOBILE ENGG.

a) Tie rod	b) Sector gear
c) Pivot	d) Spline
Correct answer: a	
Q8. The component that connects the steering rack to the knuckles is	
a) Tie rod	b) Sector gear
c) Pivot	d) Spline
Correct answer: a	
Q9. The cetane number of a Diesel fuel is a measure of	
a) Volatility	b) Viscosity
c) Ignition quality	d) Delay period
Correct answer: d	
Q 10. In petrol engines, during suction stroke, _____ is drawn in the cylinder	
a) Air and fuel	b) Only fuel
c) Only air	d) None of these
Correct answer: a	
Q 11. The main feature of Macpherson strut suspension is that	
a) The vertical size of the suspension can be made more compact	b) Non vertical external forces are supported by the suspension arms
c) The unsprung mass in lighter	d) The assembly is slightly more complicated in design
Correct answer: b	
Q 12. The capacity of a battery is usually expressed in terms of	
a) Volts	b) Amperes
c) Weight	d) Ampere hours
Correct answer: d	
Q 13. The most commonly used power plant in automobiles is	
a) Gas turbine	b) I.C. engine
c) Battery	d) None of these

QUESTION BANK

Subject: AUTOMOBILE ENGG.

Correct answer: b	
Q 14. In a square type engine	
a) Geometrical shape is square	b) Diameter and length of piston are same
c) Two cylinders are placed horizontal and two vertical	d) Stroke length and cylinder bore are same
Correct answer: d	
Q 15. The path taken by intake air is	
a) Carburetor (or throttle body) air cleaner intake manifold intake ports cylinders	b) Air cleaner carburetor (or throttle body) intake ports intake manifold cylinders
c) Air cleaner intake manifold carburetor (or throttle body) intake ports cylinders	d) Air cleaner carburetor (or throttle body) intake manifold intake ports cylinders
Correct answer: d	
Q 16. Which of the following is not a type of gearbox?	
a)Linear Mesh Gearbox	b) Sliding mesh gearbox
c)Constant mesh gearbox	d)Synchromesh gearbox
Correct answer: a	
Q 17. Overdrive is placed	
a)before gearbox	b)in between propeller shaft and gear box
c)after propeller shaft	d)in between engine and gear box
Correct answer :b	
Q 18. A machine member used to connect engine shaft to gear box is called	
a) differential	b)clutch
c)flywheel	d)propeller shaft
Correct answer: b	
Q 19. The overdrive consists of _____ gear train.	
a)simple	b)compound
c)Epicyclic	d)Reverted

QUESTION BANK

Subject: AUTOMOBILE ENGG.

Correct answer: c	
Q 20. The clutch plate is hold in between _____ and pressure plate.	
*a)*flywheel	b)gear box
c)engine	d)crankshaft
Correct answer: a	
Q 21. The angle between the king-pin center line and the vertical, in the plane of the wheel is called	
a)Caster angle.	b)Camber angle
c)King pin inclination	d)Toe-out
Correct answer: c	
Q 22. The purpose of caster is to give a trailing effect to the	
a)front wheels	b)rear wheels
c)inner wheels	d)outer wheels
Correct answer: a	
Q 23. Four-wheel drive vehicles have differential at	
a)front wheels	b) rear wheels
c) both the front and rear wheels	d)any of the front or rear wheels
Correct answer: c	
Q 24. The propeller shaft consist of	
a)knuckle joint	b) flange coupling
c) universal joint	d)Rag joint
Correct answer: c	
Q 25. During combustion in the engine, temperature in the cylinder raises up to	
a) 1500°C	b) 1700°C
c) 2700°C	d) 3700°C
Correct answer: c	
Q26. In an Internal Combustion engine, about _____ of the latent heat produced	

QUESTION BANK

Subject: AUTOMOBILE ENGG.

during combustion passes through the cylinder wall into the cooling system.	
a) 10%	b) 20%
c) 30%	d) 40%
Correct answer: b	
Q27. In motorcycles, the following type of cooling system is used	
a) Air cooling system	b) Convection
c) Both (A) and (B)	d) None of the above
Correct answer: a	
Q28. In water cooling, the water in the jackets obtains heat from the cylinders due to	
a) Conduction	b) Finite Element Analysis
c) Radiation	d) All of the above
Correct answer: a	
Q29. The thermostatic valves opens and provides passage for the flow of water towards the radiator at approximately	
a) 90° C	b) 150° C
c) 250° C	d) 300° C
Correct answer: a	
Q 30. In thermosyphon system there is (are)	
a) no pump	b) one pump
c) two pumps	d) three pumps
Correct answer: a	
Q 31. In water cooling system with pump circulation system, the following pump is used	
a) Centrifugal pump	b) Reciprocating type
c) Rotary vane pump	d) Any of the above
Correct answer: a	
Q 32. The use of pressure cap on the radiator ____ within the cooling system.	

QUESTION BANK

Subject: AUTOMOBILE ENGG.

a) Increases air pressure	b) Decreases air pressure
c) keeps air pressure same	d) None of the above
Correct answer: a	
Q 33. The cooling fan is	
a) fitted between the engine and the radiator	b) driven by belt and pulleys
c) driven from the camshaft	d) All of the above
Correct answer: d	
Q 34. The following type of thermostatic valve is (are) filled with liquid such as Acetone or Alcohol	
a)Bellows type	b)Sleeve type
c)Butterfly type	d)All of the above
Correct answer: a	
Q 35.The following is considered as best antifreeze solution	
a)Ethylene glycol	b)Distilled glycerine
c)Methanol	d)Denatured alcohol
Correct answer: a	
Q 36. Viscosity index (VI) is a measure for the change of viscosity with change in	
a)Temperature	b)Pressure
c)Volume	d)All of the above
Correct answer: a	
Q 37. The following type of Lubrication system is used in two stroke engines	
a)Petrol (mist) system	b)Wet sump system

c)Dry sump system	d)All of the above
Correct answer: a	
Q 38. In the following system, lubricating oil is carried in separate tanks from where it is fed to the engine	
a)Mist lubrication system	b)Wet sump system
c)Dry sump system	d)Splash system
Correct answer: c	
Q 39. The following type of Lubrication system is used in Aircraft Engines	
a)Mist lubrication system	b)Wet sump system
c)Dry sump system	d)Splash system
Correct answer: c	
Q 40.The following type(s) of Oil pump(s) is (are) used in Engine Lubrication system	
a)Gear type	b)Rotor type
c)Plunger type	d)All of the above
Correct answer: d	
Q 41. The following is (are) oil pressure gauge(s)	
a)Pressure expansion type	b)Electric type
c)both (A) and (B)	d)None of the above
Correct answer: c	
Q 42. The following part(s) is(are) lubricated by splash system	
a)Piston and piston rings	b)Tappets
c)Cams on camshaft	d)All of above

QUESTION BANK

Subject: AUTOMOBILE ENGG.

Correct answer: d	
Q 43. The following part is not lubricated by Pressure feed system	
a)Timing gears	b)Valve rods and Push rods
c)Rocker arms	d)Main bearings of crankshaft
Correct answer: b	
Q 44. Leaf springs absorb shocks by	
a)bending	b)twisting
c)compression	d)tension
Correct answer: a	
Q 45. Coil springs absorb shocks by	
a)bending	b)twisting
c)compression	d)tension
Correct answer: c	
Q 46. The following is a type of leaf springs	
a)three Quarter elliptic	b)semi elliptic
c)quarter elliptic	d)all of the above
Correct answer: d	
Q 47. The material used for making torsion bar is	
a)steel	b)cast iron
c)high carbon steel	d)all of above
Correct answer: a	
Q 48. Shackles are sort of	
a)coupling	b)link

QUESTION BANK

Subject: AUTOMOBILE ENGG.

c)spring	d)none of above
Correct answer: b	
Q 49. Spring shackles are used to join	
a)chassis frame and spring	b)Spring and Axle
c)chassis frame and axle	d)all of above
Correct answer: a	
Q 50. Drive (live) axles	
a)are simply beams which supports the vehicle weight	b)are usually the front axles
c)contain differential	d)all of above
Correct answer: d	
Q 51. Dead axles	
a)are simply beams which supports the vehicle weight	b)are usually the rear axles
c)contain differential	d)all of above
Correct answer: a	
Q 52. The following represents the correct specification of a tyre	
a)155-80-R-13	b)R-155-80-13
c)155-80-13-R	d)155-R-80-13
Correct answer: a	
Q 53. Telescopic shock observer consists of	
a)One chamber	b) two chamber
c)three chamber	d)four chamber
Correct answer: b	

QUESTION BANK

Subject: AUTOMOBILE ENGG.

Q 54. The force required to stop a vehicle is dependent on	
a)the weight of vehicle	b)the deceleration rate
c)both (A) and (B Correct answer: c	d)none of these
Q 55. The following is not a drum brake	
a)External contracting brake	b) internal contracting brake
c)disc brake	d)all of above
Correct answer: c	
Q 56. The process of removing air from the brake system is known as	
a)bleeding	b)self energizing
c)servo action	d)energization
Correct answer: a	
Q 57. In disc brake, the disc is attached to the	
a)wheel	b)axle
c)suspension system	d)none of the above
Correct answer: b	
Q 58. The mechanical brakes are operated by means of	
a)levers	b)bell cranks
c)cams	d)all of above
Correct answer: d	

QUESTION BANK

Subject: AUTOMOBILE ENGG.

Q 59. In vacuum brake, cylinder chamber consists of	
a)atmospheric valve	b)vacuum valve
c)both (A) and (B)	d)None of the above
Correct answer: c	
Q 60. The function of master cylinder in hydraulic brakes is to	
a)builds up hydraulic pressure to operate the brakes	b)maintains constant volume of fluid in the system
c)serves as a pump to force air out of the hydraulic system	d)all of above
Correct answer: d	

QUESTION BANK

Subject: Design of Machine Elements-I

1**. Standardization deals with the characteristics of product that include**	
(a) dimensions of machine elements	(b) method of testing the product
(c) composition and properties of engineering materials	(d) all the three
Ans: D	
2. The types of standards used in design office are	
(a) standards prepared by Bureau of Indian Standards (BIS)	(b) standards prepared by International Standards Organization (ISO)
(c) standards prepared by professional bodies like American Gear Manufacturing Association (AGMA)	(d) all the three
Ans: D	
3. The external appearance is important in	
(a) consumer durables like refrigerators and audiovisual equipment	(b) industrial products like cranes and hoists
(c) machine elements like gearbox, coupling or pressure vessel	(d) none of the above
Ans: A	
4. The job of industrial designer is	
(a) to carry out detailed stress analysis of the product	(b) to design industrial products like cranes and hoists
(c) to create aesthetically forms and shapes for the products	(d) none of the above
Ans: C	
5. Ergonomic deals with	
(a) design of controls	(b) design of displays
(c) energy expenditure in hand and foot operations	(d) all the three
Ans: D	
6. In concurrent engineering, design and manufacturing are	
(a) sequentially considered	(b) simultaneously considered
(c) separately considered	(d) none of above
Ans: B	
7. Which of the following materials has maximum strength	
(a) grey cast iron	(b) plain carbon steel

(c) alloy steel	(d) aluminium alloy
Ans: C	
8. Grey cast iron contains	
(a) less than 0.3 % carbon	(b) 0.3 to 0.5 % carbon
(c) 0.5 to 1.4 % carbon	(d) 3 to 4 % carbon
Ans: D	
9. Steels used for welded assemblies are	
(a) medium carbon steel	(b) mild steel
(c) high carbon steel	(d) alloy steel
Ans: B	
10. Steels used for automobile bodies and hoods are	
(a) medium carbon steel	(b) mild steel
(c) high carbon steel	(d) alloy steel
Ans: B	
11. Steels used for helical springs are	
(a) medium carbon steel	(b) mild steel
(c) high carbon steel	(d) alloy steel
Ans: C	
12. Material used for bearing bushes is	
(a) phosphor bronze	(b) gunmetal
(c) Babbitt	(d) any one of above
Ans: D	
13. Material used for self-lubricated bearing is	
(a) Acetal	(b) Polyurethane
(c) Polytetrafluroethylene (Teflon)	(d) any one of above
Ans: D	
14. A cast iron designated by FG300 is,	
(a) grey C.I with carbon content of 3%	(b) grey C.I with ultimate tensile strength of 300 N/mm^2
(c) grey C.I with ultimate compressive	(d) grey C.I with tensile yield strength of 300

strength of 300 N/mm^2	N/mm^2
Ans: B	
15. Plain carbon steel designated by 40C8 means	
(a) plain carbon steel with ultimate tensile strength of 400 N/mm2 and 0.8% carbon	(b) plain carbon steel with 0.35 to 0.45% carbon and 0.7to 0.9% manganese
(c) plain carbon steel with 0.8% carbon and 4 % manganese	(d) plain carbon steel with 40% carbon and 8% manganese
Ans: B	
16. In unilateral system for tolerances,	
(a) tolerances are given on both positive and negative sides of basic size	(b) one tolerance is zero and other tolerance is given on any one side of basic size
(c) one tolerance is zero and other tolerance is given only on higher side of basic size	(d) one tolerance is zero and other tolerance is given only on lower side of basic size
Ans: B	
17. In bilateral system for tolerances,	
(a) tolerances are given on both positive and negative sides of basic size	(b) one tolerance is zero and other tolerance is given on any one side of basic size
(c) one tolerance is zero and other tolerance is given only on higher side of basic size	(d) one tolerance is zero and other tolerance is given only on lower side of basic size
Ans: A	
18. According to Indian standard, 50 H8-g7 means	
(a) upper limit is (50+8) mm and lower limit (50-7) mm	(b) designation of tolerance with basic size 50 mm
(c) designation of fit of two parts with basic size 50 mm	(d) none of above
Ans: C	
19. When a circular shaft is subjected to torque, the torsional shear stress is	
(a) maximum at the axis of rotation and zero at the outer surface	(b) uniform from axis of rotation to the outer surface
(c) zero at the axis of rotation and maximum at the outer surface	(d) zero at the axis of rotation and zero at the outer surface and max. at the mean radius
Ans: C	
20. Fracture mechanics is the science of	
(a) predicting the influence of cracks on fatigue fracture of components	(b) predicting the influence of cracks on brittle fracture of components
(c) predicting the influence of cracks on ductile fracture of components	(d) none of the above
Ans: B	

Subject: Design of Machine Elements-I

21. A cotter joint is used to transmit	
(a) axial tensile force only	(b) axial tensile or compressive force
(c) axial compressive force only	(d) combined bending and torsional moment
Ans: B	
22. The taper on cotter is usually	
(a) 1 in 24	(b) 1 in 8
(c) 1 in 100	(d) 1 in 48
Ans: A	
23. A taper is provided for cotter	
(a) to ensure tightness in operating condition	(b) to provide wedge action
(c) to ease the removal of cotter during dismantling	(d) for all three reason
Ans: D	
24. The cross-section of lever is subjected to	
(a) torsional moment	(b) axial tensile force
(c) bending moment	(d) axial compressive force
Ans: C	
25. In static loading, the effect of stress concentration is more serious in case of	
(a) components made of brittle materials	(b) components made of ductile materials
(c) components made of brittle as well as ductile materials	(d) none of the above
Ans: A	
26. A stress that varies in sinusoidal manner with respect to time from a minimum value to maximum value and which has some mean as well as amplitude value is called	
(a) reversed stress	(b) fluctuating stress
(c) repeated stress	(d) varying stress
Ans: B	
27. In transverse fillet welded joint, the size of weld is equal to	
(a) 0.5 x throat of weld	(b) throat of weld
(c) 2 x throat of weld	(d) 2 x throat of weld
Ans: D	

28. The transverse fillet welds are designed for	
(a) tensile strength	(b) shear strength
(c) bending strength	(d) compressive strength
Ans: A	
29. When mild steel components are welded, the ratio of strength of the weld material to that of parent body is	
(a) more than one	(b) less than one
(c) equal to one	(d) none of the three
Ans: A	
30. A knuckle joint is used to transmit	
(a) axial tensile force only	(b) axial tensile or compressive force
(c) axial compressive force only	(d) combined bending and torsional moment
Ans: A	
31. In levers,	
(a) mechanical advantage is more than leverage	(b) mechanical advantage is less than leverage
(c) mechanical advantage is equal to leverage	(d) none of the above
Ans: C	
32. A rivet is specified by	
(a) shank diameter	(b) length of rivet
(c) type of head	(d) material of rivet
Ans: A	
33. A rivet head used in boilers and pressure vessels is	
(a) snap head	(b) countersunk head
(c) flat head	(d) half countersunk head
Ans: A	
34. Rivets are usually made of	
(a) high carbon steel	(b) alloy steel
(c) cast iron	(d) mild steel
Ans:D	

Subject: Design of Machine Elements-I

35. According to Unwin's formula, the relationship between the diameter of rivet (d) and thickness of cylinder wall (t) is	
(a) $d = 5\sqrt{t}$	(b) $d = 6\sqrt{t}$
(c) $d = 1.6\sqrt{t}$	(d) $d = \sqrt{t}$
Ans: B	
36. The edges of boiler plates for fullering and caulking are beveled at an angle of	
(a) 45°	(b) 60°
(c) $70^{O}$to 75^{O}	(d) 30^{O}
Ans: C	
37. The shear resistance of one rivet in double shear is	
(a) 2.5 times its resistance in single shear	(b) two times its resistance in single shear
(c) 1.875 times its resistance in single shear	(d) 1.5 times its resistance in single shear
Ans: C	
38. The purpose of longitudinal butt joint in boiler shell is	
(a) to make cylindrical ring from steel plate	(b) to increase the length of boiler shell by connecting one ring to another
(c) to make diameter and length of boiler shell	(d) to connect openings to shell
Ans: A	
39. Lowest value of joint efficiency is assumed in case of	
(a) single riveted butt joint	(b) double riveted lap joint
(c) double riveted butt joint	(d) single riveted lap joint
Ans: D	
40. Two shafts A and B are made of same material. The diameter of shaft A is twice that of B. The torque transmitted by shaft A will be	
(a) twice that of B	(b) four times that of B
(c) eight times that of B	(d) sixteen times that of B
Ans: C	
41. A transmission shaft subjected to pure bending moment should be designed on the basis of	
(a) maximum principal stress theory	(b) maximum shear stress theory
(c) distortion energy theory	(d) Goodman or Soderberg diagrams
Ans: A	

Subject: Design of Machine Elements-I

42. A transmission shaft subjected to bending and torsional moments should be designed on the basis of	
(a) Rankine theory	(b) Coulomb, Tresca and Guest theory
(c) Huber von Mises theory	(d) Goodman or Soderberg diagrams
Ans: B	
43. The function of key is	
(a) to connect transmission shaft to a rotating machine elements like gears	(b) to transmit torque from shaft to hub and vice versa
(c) to prevent relative rotational motion between the shaft and the connected element	(d) all of above three functions
Ans: D	
44. The standard taper for sunk key is	
(a) 1 in 100	(b) 1 in 50
(c) 1 in 10	(d) 1 in 1000
Ans: A	
45. The standard width for square or flat key in terms of shaft diameter (d) is	
(a) d	(b) d/2
(c) d/4	(d) d/8
Ans: C	
46. The key, which fits in the keyway of hub, only is called,	
(a) saddle key	(b) feather key
(c) Woodruff key	(d) Kennedy key
Ans: A	
47. Kennedy key is used in	
(a) light duty applications	(b) heavy duty applications
(c) high speed applications	(d) precision equipment's
Ans: B	
48. Splines are commonly used in	
(a) machine tool gear box	(b) automobile gear box
(c) hoist and crane gear box	(d) bicycle
Ans: B	

Subject: Design of Machine Elements-I

49. A flange coupling is used	
(a) for intersecting shafts	(b) for collinear shafts
(c) for small shafts rotating at slow speeds	(d) for parallel shafts
Ans: B	
50. In case of clamp coupling, power is transmitted by means of,	
(a) friction force	(b) shear resistance
(c) crushing resistance	(d) none of the above
Ans: A	
51. Weld joint efficiency is maximum when the pressure vessel is welded by	
(a) single-welded butt joint with backing strip	(b)single-welded butt joint without backing strip
(c) double-welded butt joint full penetration	(d) none of the above
Ans: C	
52. While designing pressure vessels according to 'Code for unfired vessel IS-2825', the design pressure is taken as	
(a) 1.05(maximum operating pressure)	(b) 1.5(maximum operating pressure)
(c) 2(maximum operating pressure)	(d) 1.3(maximum operating pressure)
Ans: A	
53. A bushed-pin type flange coupling is used	
(a) for intersecting shafts	(b) when the shafts are not in exact alignment
(c) for small shafts rotating at slow speeds	(d) for parallel shafts
Ans: B	
54. The type of key used when the gear is required to slide on the shaft is	
(a) sunk key	(b) feather key
(c) Woodruff key	(d) Kennedy key
Ans: B	
55. The standard taper for sunk key is	
(a) 1 in 100	(b) 1 in 50
(c) 1 in 10	(d) 1 in 1000
Ans: A	

Subject: Design of Machine Elements-I

56. The shafts will have same strength on the basis of torsional rigidity, if	
(a) diameter and length of both shafts is same	(b) material of both shafts is same
(c) angle of twist for both shafts is same	(d) all of above conditions are satisfied
Ans: D	
57. A gasket is made of,	
(a) asbestos or cork	(b) lead, copper or aluminum
(c) vulcanized rubber	(d) any one of the above
Ans: D	
58. The size of a fillet weld is given by,	
(a) throat of fillet	(b) smaller side of triangle
(c) hypotenuse of triangle	(d) bigger side of triangle
Ans: B	
59. In fillet welded joint, the throat of weld as compared to the size of weld is	
(a) about 0.5 times	(b) about 0.707 times
(c) about same size	(d) about $\sqrt{2}$ times
Ans: B	
60. Which of the double-strap butt joint used in boiler shell has highest efficiency,	
(a) single-riveted	(b) double-riveted
(c) triple-riveted	(d) quadruple-riveted
Ans: D	

QUESTION BANK

Subject: Industrial Automation and Robotics

Q 1. **Why is fluid power preferred in mobile vehicles?**	
a) power can be transmitted without any delay	b) when overloaded, fluid power systems stop without damaging the components
c) speed variation cannot be achieved	d) fluid is non-compressible
Correct answer: **a,b and d**	
Q 2. **Pressure of 1 bar is equal to**	
a) 14.5 psi	b) 145 psi
c) 12.5 psi	d) 145 x 10_{-6} psi
Correct answer: **14.5 psi**	
Q 3. **What effect does overloading have on fluid power and electrical systems?**	
a) electrical components get damaged in electrical systems	b) fluid power system stops working without damaging the components
c) both a. and b	d) none of the above
Correct answer: **c. both a. and b.**	
Q 4. **How is power transmitted in fluid power systems?**	
a) power is transmitted instantaneously	b) power is transmitted gradually
c) both a. and b.	d) none of the above
Correct answer: **power is transmitted instantaneously**	
Q 5. **Which of the following statements is/are false?**	
a) air is non-compressible	b) less power is developed in fluid power systems than conventional systems
c) mechanical linkages used for load handling purposes have high efficiency	d) all the above
Correct answer: **d. all the above**	

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Q 6. Fluid Power circuits use schematic drawings to	
a) simplify component function details	b) make it so that only trained persons can understand the fuctions
c)make the drawing look impressive	d) none of the above
Correct answer: 1	
Q 7. **In which systems, spool of the servo valve is operated by a torque motor?**	
a) hydromechanical servo systems	b) electrohydraulic servo systems
c) conventional servo valve	d) all the above
Correct answer: **electrohydraulic servo systems**	
Q 8. **Which of the following systems generate more energy when used in industrial applications?**	
a) hydraulic systems	b) pneumatic systems
c) both systems generate same energy	d) cannot say
Correct answer: **a. hydraulic systems**	
Q 9. **Which type of compressor requires a reservoir for compressed air and why?**	
a) rotary compressor to avoid pulsating effect	b) reciprocating compressor to avoid pulsating effect
c) both rotary and reciprocating compressors to avoid pulsating effect	d) none of the above
Correct answer: **reciprocating compressor to avoid pulsating effect**	
Q 10. **Which of the following factors is considered while selecting a compressor?**	
a) type of oil filter required	b) volumetric efficiency
c) viscosity of the liquids used	d) all the above
Correct answer: **b. volumetric efficiency**	

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Q 11. **Which of the following is a component used in air generation system?**	
a) pressure switch	b) pressure gauge
c) drier	d) intercooler
Correct answer: **c. drier**	
Q 12. **Where is an intercooler connected in a two stage compressor?**	
a) intercooler is connected after the two stage compressor	b) intercooler is connected between the two stages of the compressor
c) . intercooler is connected before the two stage compressor	d) none of the above
Correct answer: **b. intercooler is connected between the two stages of the compressor**	
Q 13. **Select the correct order of process occurring in pneumatic system**	
a) Air preparation – air generation – air control – air consumption	b) Air preparation – air control– air generation– air consumption
c) Air generation - air preparation – air control – air consumption	d) none of the above
Correct answer: **Option: c.**	
Q 14. **What is difference between regulator and pressure switch?**	
a) regulator operates at set value pressure while pressure switch operates with slight fluctuation in pressure	b) . pressure switch operates at set value pressure while regulator operates with slight fluctuation in pressure
c) regulator and pressure switch are same	d) none of the above
Correct answer: **a. regulator operates at set value pressure while pressure switch operates with slight fluctuation in pressure**	

QUESTION BANK

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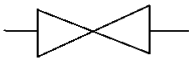
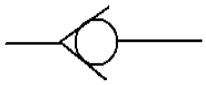
Q 15. **Select the correct standard symbols for the hydraulic** check valve

a) 
standard symbol 1

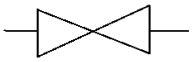
b) 
standard symbol 2

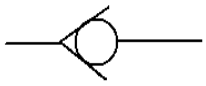
c) 
standard symbol 3

d) 
standard symbol 4

Correct answer: **b**

Q 16. **Select the correct standard symbols for the** hydraulic motor

a) 
standard symbol 1

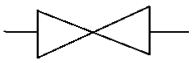
b) 
standard symbol 2

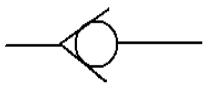
c) 
standard symbol 3

d) 
standard symbol 4

Correct answer: d

Q 17. **Select the correct standard symbols for the** pneumatic motor

a) 
standard symbol 1

b) 
standard symbol 2

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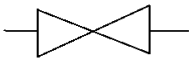
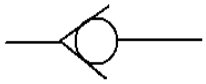
 standard symbol 3 c)	 standard symbol 4 d)
Correct answer: c	
Q 18. **Select the correct standard symbols for the** shut-off valve	
 standard symbol 1 a)	 standard symbol 2 b)
 standard symbol 3 c)	 standard symbol 4 d)
Correct answer: a	
Q 19. **Mass of water vapour in unit volume of air is known as**	
a) relative humidity	b) absolute humidity
c) saturation quantity	d) none of the above
Correct answer: **b. absolute humidity**	
Q 20. **Which valve is also known as memory valve?**	
a) single pilot signal valve	b) double pilot signal valve
c) roller lever valve	d) logic valve
Correct answer: **double pilot signal valve**	
Q 21. **Which of the following logic valve is known as shuttle valve?**	
a) OR gate	b) AND gate
c) NOR gate	d) NAND

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Correct answer: **a. OR gate**	
Q 22. **In pneumatic systems, AND gate is also known as**	
a) check valve	b) shuttle valve
c) dual pressure valve	d) none of the above
Correct answer: **c. dual pressure valve**	
Q 23. **What is a pressure sequence valve?**	
a) . it is a combination of adjustable pressure relief valve and directional control valve	b) it is a combination of nonadjustable pressure relief valve and directional control valve
c) . it is a combination of adjustable pressure reducing valve and check valve	d) it is a combination of adjustable pressure reducing valve and flow control valve
Correct answer: **a. it is a combination of adjustable pressure relief valve and directional control valve**	
Q 24. **Which of the following is used to sense the initial and final positions of a piston rod?**	
a) lever operated direction control valve	b) limit switch
c) roller lever valve	d) all the above
Correct answer: **d. all the above**	
Q 25. **Which valve gets activated only in one direction that is forward or backward movement of the piston rod?**	
a) roller lever valve	b) idle roller lever valve
c) both a and b	d) none of the above
Correct answer: **b. idle roller lever valve**	
Q 26. **Which numbers are used to denote retraction of a piston rod?**	

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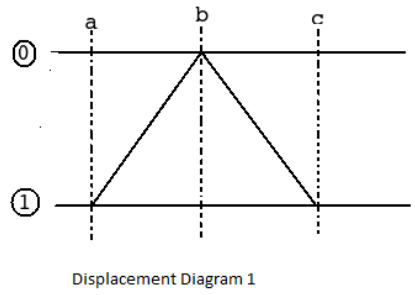
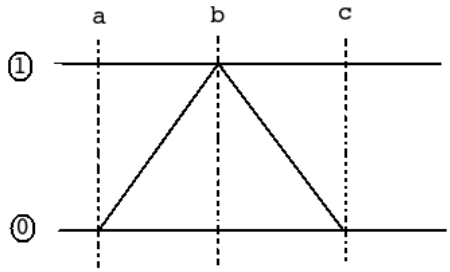
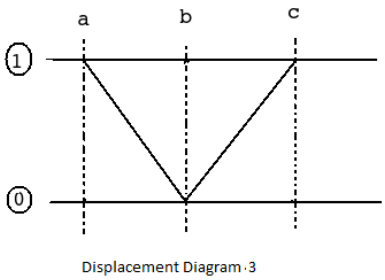
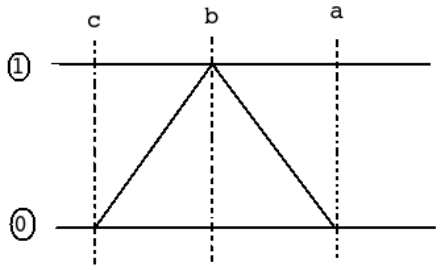
a) even numbers	b) odd numbers
c) both even and odd numbers	d) none of the above
Correct answer: **b. odd numbers**	
Q 27. **Which of the following is an element of time delay valve?**	
a) flow control valve	b) direction control valve
c) both a and b	d) none of the above
Correct answer: **c. both a and b**	
Q 28. **Which of the following is the correct displacement diagram for a single acting cylinder, where 0 and 1 on the left hand side are initial and final positions of piston rod respectively and a, b, c are stages of extension and retraction?**	
 Displacement Diagram 1 a)	 Displacement Diagram 2 b)
 Displacement Diagram 3 c)	 Displacement Diagram 4 d)
Correct answer: **b.**	

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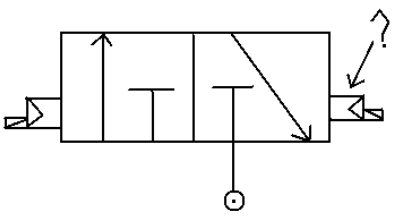
Q 29. **Overlapping of signals in pneumatic systems can be avoided by using**	
a) rolling lever valve	b) idle roller lever valve
c) both a and b	d) none of the above
Correct answer: **c. both a and b**	
Q 30. **What is the notation used for the sequence of operations mentioned below?** 1. Cylinder A undergoes forward stroke 2. Cylinder B undergoes forward stroke 3. Cylinder A undergoes backward stroke 4. Cylinder B undergoes backward stroke	
a) $A^- B^- A^+ B^+$	b) $A^+ B^- A^+ B^-$
c) $A^+ B^+ A^- B^-$	d) $A^+ B^- A^+ B^-$
Correct answer: **c. $A^+B^+A^-B^-$**	
Q 31. **Which of the following statements is true for cascade method which is used to draw a pneumatic circuit?**	
a) signal processing valves are connected in parallel	b) when the number of signal processing valves are greater than 4, the signals are strong
c) cascade method does not consider the cost factor	d) all the above
Correct answer: **c. cascade method does not consider the cost factor**	
Q 32. **What is the part, shown in below diagram of 3/2 valve, called?**  *3/2 direction control valve*	

a) manually operated valve	b) pilot operated valve
c) pressure electric converter	d) none of the above
Correct answer: **b. pilot operated valve**	
Q 33. **How is proximity switch differentiated from limit switch?**	
a) proximity switch is activated when moving parts have physical contact with it	b) . proximity switch is activated when non-moving parts have physical contact
c) proximity switch is activated when moving parts are close to it	d) none of the above
Correct answer: **c. proximity switch is activated when moving parts are close to it**	
Q 34. **Which of the following statements is true?**	
a) electromagnetic relays have high reliability at more cost	b) electromagnetic relays use low current and voltage, to have open or close contact in high voltage and current circuit
c) air pressure passed to pressure electric converter opens a contact which energizes a circuit for the flow of electric contact	d) all the above
Correct answer: **b. electromagnetic relays use low current and voltage, to have open or close contact in high voltage and current circuit**	
Q 35. **In which circuits, relay of low voltage and low current is used to make open or close contact?**	
a) high voltage and high current circuit	b) low voltage and low current circuit
c) high voltage and low current circuit	d) low voltage and low current circuit
Correct answer: **a. high voltage and high current circuit**	

QUESTION BANK

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Q 36. **In electropneumatic circuits,**	
a) spool is shifted by signal air	b) spool is shifted by control air
c) spool is shifted by electromotive force	d) all the above
Correct answer: **c. spool is shifted by electromotive force**	
Q 37. **Why are electromechanical relays more popular than solid state relays?**	
a) they are reliable	b) less costly
c) both a and b	d) none of the above
Correct answer: **c. both a and b**	
Q 38. **What is the DC range of of solenoids in pneumatic systems?**	
a) 12 V and 24 V	b) 110 V and 220 V
c) both a and b	d) none of the above
Correct answer: **a. 12 V and 24 V**	
Q 39. **Which of the following statements are true?**	
a) piston pumps are self priming	b) piston pumps require high maintenance
c) piston pumps have low cost of production	d) piston pumps have low volumetric efficiency
Correct answer: **1 and 2**	
Q 40. **) _____ of PLCs can be done in very little time.**	
a) Programming	b) Installation
c) Commissioning	d) All of the above
Correct answer: **All of the above**	
Q 41. **The PLC is used in _____.**	
a) machine tools	b) automated assembly equipment
c) moulding and extrusion machines	d) all of the above

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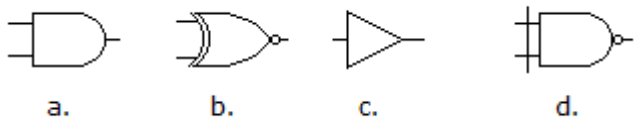
Correct answer: **all of the above**	
Q 42. **Which of the following can be the output of PLC?**	
a) Relay coils	b) Solenoids
c) Motors	d) Lamps
Correct answer: **All the a, b, c, d**	
Q 43. **Which of the following cannot be an input that is given to the PLC?**	
a) Manual switches	b) Relays
c) Sensors	d) None of the above
Correct answer: **None of the above**	
Q 44. Which of the figures shown below represents the exclusive-NOR gate?  a. b. c. d.	
a) a	b) b
c) c	d) d
Correct answer: Option b	
Q 45. Exclusive-OR (XOR) logic gates can be constructed from what other logic gates?	
a) AND gates, OR gates, and NOT gates	b) OR gates only
c) AND gates and NOT gates	d) OR gates and NOT gates
Correct answer: AND gates, OR gates, and NOT gates	
Q 46. The output of an AND gate with three inputs, A, B, and C, is HIGH when _____.	
a) A = 1, B = 1, C = 0	b) A = 0, B = 0, C = 0
c) A = 1, B = 1, C = 1	d) A = 1, B = 0, C = 1
Correct answer: Option **C**	

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Q 47. (a+b+c)'=	
a) a'b'c'	b) a'+b'+c'
c) abc	d) a+b+c
Correct answer: a a'b'c'	
Q 48. PLC means ---------- logic controller	
a) Programmable	b) Peripheral
c) Periodic	d) None of the above
Correct answer: Programmable	
Q 49. A check valve is a/an:	
a) directional control valve	b) counterbalance valve
c) reducing valve	d) none of the above
Correct answer: directional control valve	
Q 50. Pilot-operated check valves have _____flow in one direction.	
a) increased	b) controlled
c) decreased	d) none of the above
Correct answer: controlled	
Q 51. What is the name for information sent from robot sensors to robot controllers?	
a) temperature	b) pressure
c) feedback	d) signal
Correct answer: feedback	
Q 52. Which one of the following terms refers to the up - down motion of a robot arm?	
a) yaw	b) pitch
c) roll	d) elevate
Correct answer: pitch	
Q 53. Which of the following terms refers to the left – right movement of a robot	

arm?	
a) yaw	b) vertical
c) pitch	d) swing
Correct answer: yaw	
Q 54. Which of the following terms refer to the rotational motion of a robot arm?	
a) swivel	b) axle
c) roll	d) yaw
Correct answer: roll	
Q 55. What is the name for the space inside which a robot unit operates?	
a) environment	b) work envelop
c) danger zone	d) exclusion zone
Correct answer: work envelop	
Q 56. Which of the following terms IS NOT one of the five basic parts of a robot?	
a) peripheral tools	b) end effector
c) controller	d) drive
Correct answer: peripheral tools	
Q 57. The number of moveable joints in the base, the arm, and the end effector of the robot determines ..... ?	
a) degrees of freedom	b) payload capacity
c) flexibility	d) operational limits
Correct answer: degrees of freedom	
Q 58. For a robot unit to be considered a functional industrial robot, typically, how many degrees of freedom would the robot have?	
a)three	b) four
c) six	d) eight

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Correct answer: six	
Q 59. Which of the following terms refers to the use of compressed gasses to drive (power) the robot device?	
a) pneumatic	b) hydraulic
c) piezo electric	d) photo sensitive
Correct answer: pneumatic	
Q 60. With regard to the physics of power systems used operate robots, which statement or statements is most correct?	
a) hydraulics involves the compression of liquids	b) hydraulics involves the compression of air
c) pneumatics involve the compression of air	d) chemical batteries produce AC power
Correct answer: pneumatics involve the compression of air	

QUESTION BANK

Subject: Mathematics-III

Q 1. Fourier series of even function $f(x)$ in interval $[-l, l]$ is	
a) series of sines	b) series of cosines
c) series of both sines and cosines	d) none of the choice
Correct answer: (b)	
Q 2. Which of the following is an "even" function ?	
a) t^2	b) $t^2 - 4t$
c) $\sin 2t + 3t$	d) $t^3 + 6$
Correct answer: (a)	
Q 3. A "periodic function" is given by a function which	
a) has a period of 2π	b) satisfies $f(t+T) = f(t)$
c) satisfies $f(t+T) = -f(t)$	d) has a period of $T = 2\pi$
Correct answer: (b)	
Q 4. For the periodic function $f(t) = \begin{Bmatrix} 2t\ for\ 0 \le t \le 2 \\ 4\ for\ 2 \le t \le 6\ (= T) \end{Bmatrix}$. The coefficient b_1 of the continuous Fourier series associated with the given function $f(t)$ can be computed as	
a) -75.6800	b) -7.5680
c) -6.8968	d) -0.7468
Correct answer: (d)	
Q 5. For the periodic function $f(t) = \begin{Bmatrix} 2t\ for\ 0 \le t \le 2 \\ 4\ for\ 2 \le t \le 6\ (= T) \end{Bmatrix}$. The Fourier coefficient a_1 can be computed as	
a) -9.2642	b) -8.1275
c) -0.9119	d) -0.5116
Correct answer: (c)	

QUESTION BANK

Subject: Mathematics-III

Q 6. Which of the following is the Laplace transform of $f(t) = \begin{cases} 1, & if\ 0 \le t < 2 \\ t^2 - 4t + 4, & if\ t \ge 2 \end{cases}$	
a) $F(s) = \frac{2e^{-2s}}{s^3}$	b) $F(s) = \frac{1-e^{-2s}}{s} + \frac{2e^{-2s}}{s^3}$
c) $F(s) = \frac{e^{-2s}}{s} + \frac{2-2e^{-2s}}{s^3}$	d) $F(s) = \frac{2-2e^{-2s}}{s^3}$
Correct answer:	
Q 7. What is the inverse Laplace of $F(s) = \frac{s-7}{s^2+2s+5}$	
a) $e^{-t}\cos 2t + 2e^{-t}\sin 2t$	b) $e^{-t}\cos 2t - 4e^{-t}\sin 2t$
c) $2e^{-t}\cos 2t - e^{-t}\sin 2t$	d) $2e^{-t}\cos 2t + e^{-t}\sin 2t$
Correct answer: (b)	
Q 8. Find the Laplace transform of $f(t) = \begin{cases} 2, & t \in [0,2] \\ 0, & \text{Otherwise} \end{cases}$	
a) $\frac{2}{s} - \frac{2}{s}e^{-2s}$	b) $\frac{2}{s^2} - \frac{2}{s}e^{-2s}$
c) $\frac{2}{s}e^{-2s}$	d) $\frac{2}{s} + \frac{2}{s}e^{-2s}$
Correct answer: (a)	
Q 9. Laplace transform of $f(t) = [\cos 3t]^2$	
a) $\frac{1}{2s} + \frac{5s}{2(s^2+36)}$	b) $\frac{1}{2s} - \frac{s}{(s^2+36)}$
c) $\frac{1}{2s} + \frac{s}{2(s^2+36)}$	d) $\frac{1}{s} + \frac{s}{2(s^2+36)}$
Correct answer: (c)	
Q 10. Find Laplace inverse of $F(s) = \frac{2}{s+k}$	
a) $2+e^{-kt}$	b) e^{-kt}
c) $2e^{kt}$	d) $2e^{-kt}$
Correct answer: (d)	
Q 11. What Partial Differential Equation is formed by eliminating two arbitrary functions	

from $z = yf(x) + xg(y)$.	
a) $x\frac{\partial z}{\partial x} + y\frac{\partial z}{\partial y} = z^2 + xy\left(\frac{\partial^2 z}{\partial x \partial y}\right)$	b) $x\frac{\partial z}{\partial x} + y\frac{\partial z}{\partial y} = z + xy\left(\frac{\partial^2 z}{\partial x \partial y}\right)$
c) $x\frac{\partial z}{\partial x} + y\frac{\partial z}{\partial y} = z - xy\left(\frac{\partial^2 z}{\partial x \partial y}\right)$	d) $\frac{\partial z}{\partial x} + \frac{\partial z}{\partial y} = z + xy\left(\frac{\partial^2 z}{\partial x \partial y}\right)$
Correct answer: (b)	
Q 12. Solution of PDE $(1-x)p + (2-y)q = 3 - z$ is	
a) $z = ax + by + (3 - a - 2b)$	b) $z = ax + by + (3 - a + 2b)$
c) $z = ax + by + (3 + a - 2b)$	d) $z = ax - by + (3 - a - 2b)$
Correct answer: (a)	
Q 13. The general solution of $x^2p + y^2q = (x + y)z$ is	
a) $F(x^{-1} - y^{-1}, (x - y)z^{-1}) = 0$	b) $F(x - y, (x - y)z^{-1}) = 0$
c) $F(x^{-1} - y^{-1}, (x + y)z^{-1}) = 0$	d) $F(x^{-1} + y^{-1}, (x - y)z^{-1}) = 0$
Correct answer: (a)	
Q 14. The complete solution of PDE $(D^3 - D'^3 + 3DD'^2 - 3D^2D')z = 0$ is	
a) $f_1(y + 2x) + f_2(y + x) + xf_3(y + x)$	b) $f_1(y + x) + xf_2(y + x) + x^2f_3(y + x)$
c) $f_1(y - x) + xf_2(y - x) + x^2f_3(y - x)$	d) None of the option
Correct answer: (b)	
Q 15. The particular integral of the PDE $(D^2 + 3DD' - 4D'^2)z = e^{2x+4y}$	
a) $\frac{e^{2x+4y}}{36}$	b) $-\frac{e^{2x+4y}}{9}$
c) $-\frac{e^{2x+4y}}{49}$	d) $-\frac{e^{2x+4y}}{36}$
Correct answer: (d)	
Q 16. What is the geometrical meaning of equation $\lvert z - 1\rvert < 1$?	
a) Right half of complex plane.	b) Circle with centre $(1,0)$ and radius 1.

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Subject: Mathematics-III

c) Circle with centre $(-1,0)$ and radius 1.	d) Open disc with centre $(1,0)$ & radius 1.
Correct answer: (d)	
Q 17. Which function is an entire function?	
a) z^2	b) $\cos\frac{1}{z}$
c) $\frac{1}{z^2}$	d) $(\sin z)^{-1}$
Correct answer: (a)	
Q 18. Determine the type of singularity at $z=1$ in function $\frac{e^z-1}{z(z-1)}$.	
a) It is essential singularity.	b) pole of order 2.
c) Simple pole.	d) It is not a singularity in given function.
Correct answer: (c)	
Q 19. Laurant series of $f(z)=\frac{1}{1-z}$ in region $\|z\|>1$ is	
a) $-\frac{1}{z}-\frac{1}{z^3}-\frac{1}{z^5}-\frac{1}{z^7}-\ \ldots\ldots$	b) $\frac{1}{z}+\frac{1}{z^2}+\frac{1}{z^3}+\frac{1}{z^4}+\ \ldots\ldots$
c) $-\frac{1}{z}+\frac{1}{z^2}-\frac{1}{z^3}+\frac{1}{z^4}-\ \ldots\ldots$	d) $-\frac{1}{z}-\frac{1}{z^2}-\frac{1}{z^3}-\frac{1}{z^4}-\ \ldots\ldots$
Correct answer: (d)	
Q 20. Integral $\oint_{C_1}\frac{1}{z^2+1}$, where C_1: $\|z-i\|=1$, is	
a) π	b) $i\pi$
c) 0	d) $i\frac{\pi}{2}$
Correct answer: (a)	
Q 21. If $f(z)$ has a simple pole at z_0. Then	
a) $res_{z=z_0}f(z)=\lim_{z\to z_0}f(z)$	b) $res_{z=z_0}f(z)=\lim_{z\to z_0}(z-z_0)f(z_0)$
c) $res_{z=z_0}f(z)=\lim_{z\to z_0}(z-z_0)^2f(z)$	d) $res_{z=z_0}f(z)=\lim_{z\to z_0}(z-z_0)f(z)$.
Correct answer: (d)	

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Q 22. Laplace of $\frac{d^2f}{dt^2} = f''$ is	
a) $s^2F(s) - sf(0) - f'(0)$	b) $s^2F(s) + sf(0) + f'(0)$
c) $s^2F(s) - sf(s) - f'(s)$	d) $sF(s) - f(0) - f'(0)$
Correct answer: (a)	
Q 23. Laplace transform of $f(t) = \begin{Bmatrix} 0, & 0 \le t < t_0 \\ a, & t \ge t_0 \end{Bmatrix}$ is	
a) $\frac{a}{s}e^{-st_0}$	b) ase^{-st_0}
c) $\frac{1}{s}e^{-st_0}$	d) $\frac{s}{a}e^{-st_0}$
Correct answer: (a)	
Q 24. Laplace inverse of $\frac{a}{s^2-a^2}$	
a) $\sin at$	b) $\cos at$
c) $\sinh at$	d) $\cosh at$
Correct answer: (c)	
Q 25. Find the value of $\cos t * \sin t$, ($*$ stands for convolution)	
a) $\frac{1}{2}t\cos t$	b) $\frac{1}{2}t\sin t$
c) $\frac{1}{2}\sin t$	d) $t\sin t$
Correct answer: (b)	
Q 26. $L^{-1}\left(\frac{s}{(s^2+1)^2}\right)$	
a) $\frac{1}{2}t\cos t$	b) $\frac{1}{2}t\sin t$
c) $\frac{1}{2}\sin t$	d) $t\sin t$
Correct answer: (b)	
Q 27. Complete solution of differential equation $\frac{dx}{dt} + 3x = 0\ where\ x(0) = 1$ is	

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a) $\frac{1}{3}e^{-3t}$	b) $3e^{-3t}$
c) e^{-2t}	d) e^{-3t}
Correct answer: (d)	
Q 28. Solution of simultaneous differential equations $\frac{dx}{dt} = 2x - 3y,\ \ \frac{dy}{dt} = y - 2x,$ $where\ x(0) = 8\ and\ y(0) = 3.$	
a) $x(t) = 5e^{-t} - 3e^{4t},\ y(t) = 5e^{-t} + 2e^{4t}$	b)$x(t) = 5e^{-2t} + 3e^{-t},\ y(t) = 5e^{-2t} - 2e^{-t}$
c) $x(t) = 5e^{-t} + 3e^{4t},\ y(t) = 5e^{-t} - 2e^{4t}$	d) $x(t) = 5e^{-2t} - 3e^{-t},\ y(t) = 5e^{-2t} + 2e^{-t}$
Correct answer: (c)	
Q 29. Partial differential equations of all spheres of fixed radius (say, R) having centres in xy-plane is	
a) $(p^2 + q^2 + 1)z^2 = R^2$	b) $(p^2 - q^2 - 1)z^2 = R^2$
c) $\frac{(p^2+q^2+1)}{z^2} = R^2$	d) $\frac{(p^2-q^2-1)}{z^2} = R^2$
Correct answer: (a)	
Q 30. Solution of $x^2(y-z)p + y^2(z-x)q = z^2(x-y)$ is	
a) $F(x^{-1} + y^{-1} + z^{-1}, xyz) = 0$	b) $F(x^{-1} + y^{-1} + z^{-1}, x^{-1}y^{-1}z^{-1}) = 0$
c) $F(xy + yz + zx, xyz) = 0$	d) $F((x + y + z)^{-1}, xyz) = 0$
Correct answer: (a)	
Q 31. Complete solution of PDE $(D^2 + D'^2)z = 0$ is	
a) $f_1(y + x) + xf_2(y + x)$	b) $f_1(y + ix) + f_2(y - ix)$
c) $f_1(y - x) + xf_2(y - x)$	d) $f_1(y + ix) + xf_2(y + ix)$
Correct answer: (b)	
Q 32. Particular integral of PDE $(D^2 - DD')z = \cos x \cos 2y$ is	
a) $\sin(x + 2y) - \frac{1}{3}\sin(x - 2y)$	b) $\cos(x + 2y) + \frac{1}{3}\cos(x - 2y)$

c) $\sin(x+2y)+\frac{1}{3}\sin(x-2y)$	d) $\cos(x+2y)-\frac{1}{3}\cos(x-2y)$
Correct answer: (d)	
Q 33. Complementary function of $(D^2-5DD'+6D'^2)z=y\sin x$ is	
a) $\emptyset_1(y-3x)+\emptyset_2(y+2x)$	b) $\emptyset_1(y+3x)+\emptyset_2(y+2x)$
c) $\emptyset_1(y+3x)+\emptyset_2(y-2x)$	d) $\emptyset_1(y-3x)+\emptyset_2(y-2x)$
Correct answer: (b)	
Q 34. A complex function $w=f(z)$ is said to be analytic at a point z_0 if	
a) $f(z)$ is differentiable at z_0.	b) $f(z)$ is differentiable at z_0 and also at few points in some neighbourhood of z_0.
c) $f(z)$ is differentiable at z_0 and at every point in some neighbourhood of z_0.	d) $f(z)$ is differentiable at z_0 and at every point inside the unit circle with centre at z_0.
Correct answer: (c)	
Q 35. Which of the following function is not entire if $f(z)$ and $g(z)$ are entire functions?	
a) $f(z)+g(z)$	b) $f(z)g(z)$
c) $f(z)-g(z)$	d) $\frac{f(z)}{g(z)}$
Correct answer: (d)	
Q 36. The harmonic conjugate of $u(x,y)=x^3-3xy^2-5y$ is	
a) $v(x,y)=3x^2y-y^3-5x+C$	b) $v(x,y)=3x^2y-y^3+5x^2+C$
c) $v(x,y)=3x^2y+y^3+5x+C$	d) $v(x,y)=3x^2y-y^3+5x+C$
Correct answer: (d)	
Q 37. A function $u(x,y)$ is said to be harmonic if	

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a) $\frac{\partial^2 u}{\partial x^2}+\frac{\partial^2 u}{\partial y^2}=0$	b) $\frac{\partial^2 u}{\partial x^2}=0\ and\ \frac{\partial^2 u}{\partial y^2}=0$
c) $\frac{\partial^2 u}{\partial x^2}=\frac{\partial^2 u}{\partial y^2}$	d) None
Correct answer: (a)	
Q 38. At which points is the function $f(z)=\frac{1}{z^2+5iz-4}$ not analytic?	
a) $z=2i\ and\ z=-7i$	b) $z=-7i$
c) $z=2i$	d) $z=0$
Correct answer: (a)	
Q 39. Evaluate the integral $\int_C xy^2dx$, where C is the quarter circle defined by $x=4\cos t\,,\ y=4\sin t\,,\ 0\le t\le\frac{\pi}{2}$	
a) -32	b) -16
c) -64	d) -128
Correct answer: (c)	
Q 40. Evaluate $\int_C xydx+x^2dy$, where C is the graph of $y=x^3,-1\le x\le 2$	
a) $\frac{132}{7}$	b) $\frac{132}{5}$
c) $-\frac{64}{5}$	d) $\frac{64}{5}$
Correct answer: (b)	
Q 41. Evaluate $\int_C \bar{z}dz$, where C is given by $x=3t, y=t^2, -1\le t\le 4$	
a) $195-65i$	b) $-195+65i$
c) $-195-65i$	d) $195+65i$
Correct answer: (d)	
Q 42. What is the value of integral $\int_C e^z dz$ where C is an unit circle with centre at origin?	

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a) $\int_{-C} e^z dz$	b) 0
c) 1	d) $-\int_C e^z dz$
Correct answer: (b)	
Q 43. Value of integral $\oint_C \frac{5z+7}{z^2+2z-3} dz$ is	
a) $-2\pi i$	b) πi
c) $6\pi i$	d) 0
Correct answer: (c)	
Q 44. Evaluate $\oint_C \frac{z+1}{z^4+2iz^3} dz$, where C is the circle $\|z\| = 1$	
a) $-\frac{\pi}{4}+\frac{\pi}{2}i$	b) $\frac{\pi}{4}+\frac{\pi}{2}i$
c) $-\frac{\pi}{4}-\frac{\pi}{2}i$	d) $\frac{\pi}{4}-\frac{\pi}{2}i$
Correct answer: (a)	
Q 45. The Maclaurin's expansion of $f(z) = \frac{1}{(1-z)^2}$ is	
a) $1+z+z^2+z^3+\ldots\ldots$	b) $1+2z+3z^2+4z^3+\ldots\ldots$
c) $1-z+z^2-z^3+\ldots\ldots$	d) $1+\frac{1}{z}+\frac{1}{z^2}+\frac{1}{z^3}+\ldots\ldots$
Correct answer: (b)	
Q 46. The Laurent's series of $f(z) = \frac{1}{z(z-1)}$ for the annular $0 < \|z\| < 1$ is	
a) $\frac{1}{z^2}+\frac{1}{z^3}+\frac{1}{z^4}+\frac{1}{z^5}+\ldots\ldots$	b) $\frac{1}{(z-1)^2}-\frac{1}{(z-1)^3}+\frac{1}{(z-1)^4}-\frac{1}{(z-1)^5}\ldots\ldots$
c) $\frac{1}{z-1}-1+(z-1)-(z-1)^2+\ldots\ldots$	d) $-\frac{1}{z}-1-z-z^2-z^3-\ldots\ldots$
Correct answer: (d)	
Q 47. Residue of function $f(z) = \frac{1}{(z-1)^2(z-3)}$ at $z = 1$ is	
a) $-\frac{1}{4}$	b) $\frac{1}{4}$

c) $-\frac{1}{2}$	d) $\frac{1}{2}$
Correct answer: (a)	
Q 48. Evaluate the integral $\oint_C \frac{1}{(z-1)^2(z-3)}dz$, where contour C is the rectangle defined by $x=0, x=4, y=-1, y=1$.	
a) $2\pi i$	b) $-2\pi i$
c) $\frac{\pi}{2}i$	d) 0
Correct answer: (d)	
Q 49. Which of following statement about the function $f(x)=\begin{cases}1+\frac{2x}{\pi};\ -\pi\le x\le 0\\ 1-\frac{2x}{\pi};\ 0\le x\le\pi\end{cases}$ is false?	
a) It is a triangular wave form of period 2π.	b) It is an even function.
c) It produces a Fourier Sine series.	d) It produces a Fourier Cosine series.
Correct answer: (c)	
Q 50. Bessel function of order p is	
a) $J_p(x)=\sum_{k=0}^{\infty}\frac{(-1)^k}{k!\Gamma(k+p+1)}\left(\frac{x}{2}\right)^{2k+p}$	b) $J_p(x)=\sum_{k=0}^{\infty}\frac{(-1)^k}{k!\Gamma(k+p-1)}\left(\frac{x}{2}\right)^{2k+p}$
c) $J_p(x)=\sum_{k=0}^{\infty}\frac{(-1)^k}{k!(k+n)!}\left(\frac{x}{2}\right)^{2k+n}$	d) $J_p(x)=\sum_{k=0}^{\infty}\frac{1}{k!\Gamma(k+p+1)}\left(\frac{x}{2}\right)^{2k+p}$
Correct answer: (a)	
Q 51. Which of the following is true?	
a) $\frac{d}{dx}[x^nJ_n(x)]=x^nJ_{n-1}(x)$	b) $\frac{d}{dx}[x^nJ_n(x)]=-x^{-n}J_{n+1}(x)$
c) $\frac{d}{dx}[x^nJ_n(x)]=\frac{x}{2n}[J_{n-1}(x)+J_{n+1}(x)]$	d) $\frac{d}{dx}[x^nJ_n(x)]=\frac{1}{2}[J_{n-1}(x)-J_{n+1}(x)]$
Correct answer: (a)	
Q 52. The generating function of Legendre polynomial of order n, *i.e.* $\mathrm{P_n(x)}$ is	

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a) $(1+2xt+t^2)^{-\frac{1}{2}}$	b) $(1-2xt-t^2)^{-\frac{1}{2}}$
c) $(1+2xt-t^2)^{-\frac{1}{2}}$	d) $(1-2xt+t^2)^{-\frac{1}{2}}$
Correct answer: (d)	
Q 53. The integral $\int_{-1}^{1} P_m(x)P_n(x)dx$ is equal to	
a) zero for all values of m & n.	b) $\frac{2}{2n+1}$ $for\ all\ m$ & n.
c) $\begin{bmatrix} 0, & m \neq n \\ \frac{2}{2n+1}, & m = n \end{bmatrix}$	d) $\begin{bmatrix} \frac{2}{2n+1}, & m \neq n \\ 0, & m = n \end{bmatrix}$
Correct answer: (c)	
Q 54. The generating function for $J_n(x)$ is	
a) $e^{\frac{1}{2}x\left(t+t^{-1}\right)}$	b) $e^{\frac{1}{2}x\left(t-t^{-1}\right)}$
c) $e^{x\left(t-t^{-1}\right)}$	d) $e^{x\left(t+t^{-1}\right)}$
Correct answer: (b)	
Q 55. At which point the series $\frac{1}{1^2}+\frac{1}{3^2}+\frac{1}{5^2}+$ ... ... $=\frac{\pi^2}{8}$ can be deduced from the Fourier series of $f(x)=\begin{Bmatrix} -\pi, & -\pi \leq x < 0 \\ x, & 0 \leq x \leq \pi \end{Bmatrix}$?	
a) At $x=\frac{\pi}{2}$	b) At $x=-\pi$
c) At $x=0$	d) At $x=\pi$
Correct answer: (c)	
Q 56. If $L^{-1}\{F(s)\}=f(t)$, then $L^{-1}\{F(s-a)\}$ =?	
a) $e^{-at}f(t)$	b) $e^{\frac{t}{a}}f(t)$
c) $e^{at}f(t)$	d) $e^{t-a}f(t)$
Correct answer: (c)	
Q 57. Which of the following cannot be the solution of one-dimensional wave	

equation, that is $\frac{\partial^2 y}{\partial t^2} = c^2 \frac{\partial^2 y}{\partial x^2}$? *Note: where all c are arbitrary constants.*	
a) $y = (c_1 e^{px} + c_2 e^{-px})(c_3 e^{cpt} + c_4 e^{-cpt})$	b) $y = (c_5 \cos px + c_6 \sin px)(c_7 \cos cpt + c_8 \sin cpt)$
c) $y = (c_9 x + c_{10})(c_{11} t + c_{12})$	d) $y = (c_{13} x + c_{14}) c_{15}$
Correct answer: (d)	
Q 58. Invariant points of bilinear transformation $w = \frac{az+b}{cz+d}$ are	
a) only zero	b) $0 \; and \; 1$
c) $-\frac{b}{a}$ & $-\frac{d}{c}$	d) roots of equation $cz^2 + (d-a)z - b = 0$
Correct answer: (d)	
Q 59. The transformation $w = f(z) = z + 2$ transforms the unit disc $\|z\| < 1$ to	
a) $\|w-2\| = 1$	b) $\|w-2\| > 1$
c) $\|w-2\| \leq 1$	d) $\|w-2\| < 1$
Correct answer: (d)	
Q 60. Which of the following is an “odd” function?	
a) $\sin t$	b) $t^2 - 1$
c) $t^{\frac{1}{3}}$	d) $\sin^2 t$
Correct answer: (a)	

QUESTION BANK

Subject: Mechanical Measurements & Metrology

Q 1. The instrument with null output is:	
a) light meter of a camera	b) Bourdon pressure gauge
c) a platform type weighing machine	d) a mercury manometer
Correct answer:	C
Q 2. The function of transducer element is to:	
a)amplify the input signal	b) average of fluctuating type of input signals
c)convert the input signal to a form which can be easily processed	d) regulate th signal for a suitable control application
Correct answer:	C
Q 3. The smallest change in the value of input variable being measured, that will cause a change in the output signal of the instrument is termed as:	
a) hysteresis	b) drift
c) resolution	d) threshold
Correct answer:	C
Q 4. The error which is repetitive in nature is:	
a) observational error	b) environmental error
c) random error	d) systematic error
Correct answer:	D
Q 5. Zero error of a micrometer is:	
a) random error	b) interference error
c) systematic error	d) loading error
Correct answer:	C
Q 6. The gradual departure of the instrument output caused by certain interfering input and component instabilities is termed as:	
a) hysteresis	b) dead zone
c) threshold	d) drift
Correct answer:	D
Q 7. Repeatability of the instrument with respect to given fixed input is:	
a) accuracy	b) precision
c) resolution	d) sensitivity
Correct answer:	B

QUESTION BANK

Subject: Mechanical Measurements & Metrology

Q 8. Which of the following is not a self-generating type of transducer	
a) thermocouple	b) LVDT
c) photo voltaic cell	d) Bourdon tube of pressure gauge
Correct answer:	B
Q 9. The elastic type of transducer element in the Bourdon pressure gauge is of	
a) circular cross section	b) square cross section
c) rectangular cross section	d) elliptical cross section
Correct answer:	D
Q 10.Error caused by the act of measurement on the physical system being tested is	
a) hysteresis error	b) random error
c) systematic error	d) loading error
Correct answer:	D
Q 11. Threshold of the instrument is defined as	
a) ratio of the output of the instrument to the corresponding input signal	b) drift of the output of the instrument due to ageing of components
c) smallest input measureable change (non-zero value)	d) smallest measureable input signal which can be detected
Correct answer:	D
Q 12. The value of gauge factor for a semiconductor strain gauge used in practice can be approximately	
a) 0.48	b) 2.05
c) 3.5	d) 150
Correct answer:	D
Q 13. The most common transducer for shock and vibration measurement is	
a) dial gauge	b) ring type of load cell
c) LVDT	d) piezoelectric pick up
Correct answer:	D
Q 14. The most usual value of resistance, suitable for the wire resistance strain gauge is:	
a) 12 Ω	b) 50 Ω
c) 120 Ω	d) 2400 Ω
Correct answer:	C
Q 15. LVDT works on the principle of	

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a) variable resistance	b) variable self-induction
c) variable mutual induction	d) variable capacitance
Correct answer:	C
Q 16. The following is not a type of comparator	
a) Electrical	b) Pneumatic
c) Optical	d) Hydraulic
Correct answer:	d
Q 17. The following is not used to measure angles	
a) Bevel protectors	b) Optical flats
c) Calibrated levels	d) Clinometers
Correct answer:	b
Q 18. The effective diameter (E) in three wire method is given by	
a) E = M – C	b) E = M + C
c) E = M / C	d) E = M x C
Correct answer:	a
Q 19. A strain gauge material should have low	
a) Gauge factor	b) Sensitivity
c) Resistance temperature coefficient	d) All of the above
Correct answer:	c
Q 20. For measuring the temperature of a boiler furnace which one of the following is the appropriate thermometer?	
a) Bimetal strip thermometer	b) Thermocouple
c) Vapour pressure thermometer	d) Optical pyrometer
Correct answer:	d
Q 21. McLeod gauge is used to measure	
a) Pressure	b) Vacuum
c) Flow rate	d) pH value
Correct answer:	b
Q 22. Ionisation gauge is used to measure pressures	
a) Below 3 microns	b) Between 100 and 200 microns
c) Above 100 microns	d) Above 200 microns
Correct answer:	a

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Q. 23. Which of the following can be used as sensing element for an instrument?	
a) Diaphragm	b) Proving ring
c) Bourdon tube	d) Any of the above
Correct answer:	d
Q 24. A Pirani gauge works on the principle of change of	
a) Thermal conductivity of medium	b) Electrical resistivity
c) Conductance	d) Capacitance
Correct answer:	a
Q 25. Which of the following Bourdon tube material can be used for very high pressures?	
a) Phosphor bronze	b) Stainless steel
c) Alloy steel	d) K-monel
Correct answer:	c
Q 26. Which of the following is an indirect pressure measuring device?	
a) Ionisation gauge	b) Bourdon tube
c) Flat diaphragm	d) Manometer
Correct answer:	a
Q 27. Which of the following can be used as thermal detector?	
a) Pyrometer	b) Thermistor
c) Thermocouple	d) Any of the above
Correct answer:	d
Q 28. A hot wire anemometer is used to measure	
a) Pressure of gases	b) Liquid discharges
c) Very low pressures	d) Gas velocities
Correct answer:	d
Q 29. A load cell cannot be used to measure	
a) Weight	b) Temperature
c) Level	d) All of above
Correct answer:	b
Q 30. Which of the following is an indirect method of pressure measurement?	
a) McLeod gauge	b) Thermal conductivity gauge
c) Ionisation gauge	d) All of the above

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Correct answer:	d
Q 31. Which of the following material is used for photoconductive cells	
a) Selenium	b) Mica
c) Thorium	d) Barium sulphate
Correct answer:	a
Q 32. Which of the following is generally not used as a thermocouple material?	
a) Platinum - Rhodium	b) Chromel - Alumel
c) Gold - Silver	d) Chromel - Copper
Correct answer:	c
Q 33. Thermistors have	
a) Low and positive temperature coefficient	b) Low and negative temperature coefficient
c) High and negative temperature coefficient	d) Zero temperature coefficient
Correct answer:	c
Q 34. A rotameter can be used to measure	
a) Specific gravity	b) Flow
c) Viscosity	d) Pressure of wind
Correct answer:	b
Q 35. Which of the following is not a piezoelectric material?	
a) Quartz	b) Sodium chloride
c) Ammonium dihydrogen phosphate	d) All of the above
Correct answer:	b
Q 36. Thermocouples are generally used for temperature measurements upto	
a) 250C	b) 500C
c) 1000C	d) 1600C
Correct answer:	d
Q 37. Which of the following device can be used to measure blow of air around an aeroplane?	
a) Anemometer	b) Rotameter
c) Manometer	d)None of above
Correct answer:	a
Q 38. A load cell is essentially a	

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a) Thermocouple	b) Thermistor
c) Photoconductive device	d) Strain gauge
Correct answer:	d
Q 39. A LVDT has	
a) One primary coil and two secondary coils	b) Two primary coils and one secondary coil
c) One primary coil and one secondary coil	d) Two primary coils and two secondary coils
Correct answer:	c
Q 40. Instruments used for angular measurements	
a) Micrometer	b) Sine bar
c) vernier calliper	d) None of above
Correct answer:	b
Q 41. Which of the following transducer is used to translate linear motion into electrical signals?	
a) LVDT	b) Strain gauge
c) Bellows	d) Thermistor
Correct answer:	a
Q 42. What does a hall effect sensor sense?	
a) temperature	b) moisture
c) magnetic fields	d) pressure
Correct answer:	c
Q 43. What causes the piezoelectric effect?	
a) heat or dissimilar metals	b) pressure on a crystal
c) water running on iron	d) a magnetic field
Correct answer:	b
Q 44. A transducer's function is to	
a) transmit electrical energy	b) convert energy
c) produce mechanical energy	d) prevent current flow
Correct answer:	b
Q 45. Self generating type transducers are _____ transducers	
a) Active	b) passive
c) Secondary	d) Inverse
Correct answer:	a
Q 46. A transducer that converts measurand into the form of pulse is called	
a) Active transducer	b) Analog Transducer

c)Digital Transducer	d) Pulse Transducer
Correct answer:	d
Q 47. Which of the following is a digital transducer	
a) Strain Guage	b) Encoder
c) Thermistor	d) LVDT
Correct answer:	b
Q 48. An inverse transducer is a device that converts	
a) an electrical quantity into a non electrical quantity	b) electrical quantity into mechanical quantity
c) electrical energy into thermal energy	d) Electrical energy into light energy
Correct answer:	a
Q 49. A strain guage is a passive transducer and is employed for converting	
a) mechanical displacement into a change in resistance	b) pressure into a change in resistance
c)force into displacement	d) pressure into displacement
Correct answer:	a
Q 50. . The ratio of output signal or response of the instrument'' to a change in input or measured variable is called	
a) sensitivity	b) precision
c) resolution	d) threshold
Correct answer:	a
Q 51. Resolution of a transducer depends on	
a) Material of wire	b) Length of wire
c)Diameter of wire	d) Excitation voltage
Correct answer:	c
Q 52. Bonded wire strain gauges are	
a) exclusively used for construction of transducers	b) exclusively used for stress analysis
c) used for both stress analysis and construction of transducer	d) pressure measurement
Correct answer:	c
Q 53. Quartz and Rochelle salt belongs to _____ of piezo electric materials	
a) Natural group	b) Synthetic group
c) Natural or synthetic group	d) Fiber Group
Correct answer:	a

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Q 54. LVDT windings are wound on	
a) steel sheets	b) aluminium
c) ferrite	d) copper
Correct answer:	c
Q 55. Which of the following can be measured with the help of piezo electric crystal	
a) Force	b) Velocity
c) Sound	d) Pressure
Correct answer:	a
Q 56. Capacitive transducers are normally employed for _____ measurement	
a) Static	b) Dynamic
c) Transient	d) Both static and dynamic
Correct answer:	b
Q 57. Photo conductive cell consists of a thin film of	
a) quartz	b) lithium sulphate
c) barium titanate	d) selenium
Correct answer:	d
Q 58. ._____ is an example of photo emissive cell	
a) LDR	b) Photo diode
c) Photo transistor	d) Photo multiplier
Correct answer:	a
Q 59. Fibre optics sensor can be used to sense _____	
a) Displacement	b)Power
c)Current	d) Resistance
Correct answer:	a
Q 60. Photo multiplier consists of	
a)1 photo emissive cathode and 2 dynodes	b)2 photo emissive cathode and 2 dynodes
c) 2photo emissive cathode and 1 dynodes	d) 1photo emissive cathode and 1 dynodes
Correct answer:	a

QUESTION BANK

Subject: Design of Machine Elements-II

Q 1. The type of spring used to absorb shocks and vibrations in vehicles is,	
a)helical extension spring	b)multi-leaf spring
c)spiral spring	d)Bellevile (coned disk) spring
Correct answer:b	
Q 2. The type of spring used in vehicle clutches is,	
a)helical compression spring	b)Belleville spring
c)a and b	d)helical torsion spring
Correct answer:c	
Q 3. When the helical compression spring is subjected to axial compressiveforce, the type of stress induced in the spring wire is,	
a)tensile stress	b)compressive stress
c)bending stress	d)torsional shear stress
Correct answer:d	
Q 4. The maximum shear stress in spring wire is induced at	
a)inner surface of the coil	b)outer surface of the coil
c)central surface of the coil	d)end coils
Correct answer:a	
Q 5. The function of automotive multi-leaf spring is	
a)to measure the force	b)to store and release energy
c)to absorb shocks and vibrations	d)to activate the mechanism
Correct answer:c	
Q 6. The ends of spring, which are in contact with the seat, are,	
a)active coils	b)inactive coils
c)transmit maximum force	d)do not transmit any force
Correct answer:b	
Q 7. The leaves of multi-leaf spring are subjected to	
a)tensile stress	b)compressive stress
c)bending stress	d)torsional shear stress
Correct answer:c	
Q 8. The spring operates	
a)within plastic limit	b)within elastic limit

c)within elasto-plastic limit	d)within visco-elastic limit
Correct answer:b	
Q 9. The clutch used in scooters is	
a)multi-plate clutch	b)single plate clutch
c)centrifugal clutch	d)cone clutch
Correct answer:a	
Q 10. The clutch used in trucks is	
a)centrifugal clutch	b)cone clutch
c)multi-plate clutch	d)single plate clutch
Correct answer:d	
Q 11. The cone clutches have become obsolete because	
a)strict requirement of coaxiality of two shafts	b)difficult to disengage
c)difficult construction	d)none of the above
Correct answer:c	
Q 12. In case of multi-disk clutches, oil is used,	
a)to reduce the friction	b)to carry away the heat
c)to lubricate the contacting surfaces	d)for all above functions
Correct answer:d	
Q 13. The friction moment in a clutch with uniform wear as compared to friction moment with uniform pressure is	
a)more	b) equal
c) less	d)more or less depending on speed
Correct answer:c	
Q 14. The commonly used angle between leather or asbestos friction liningsurface and axis of cone clutch for a cone clutch is	
a) 14.5^0	b) 20^0
c) 12.5^0	d) 45^0
Correct answer:c	
Q 15. Torque transmitting capacity of clutch depends upon	
a)coefficient of friction	b)dimensions of friction lining

c)axial force provided to engage the clutch	d)all the above three factors
Correct answer:d	
Q 16. In the running condition, the net force acting on the drum of centrifugalclutch is equal to	
a)the centrifugal force on shoe	b)the centrifugal force on shoe minus spring force
c)the centrifugal force on shoe plus spring force	d)the spring force
Correct answer:b	
Q 17. The brake used in railway coaches is	
a) shoe brake	b) block brake
c) band brake	d)disk brake
Correct answer:b	
Q 18. The brake used in most of the automobile vehicles is	
a)internal expanding shoe brake	b)block brake
c)band brake	d)disk brake
Correct answer:a	
Q 19. The brake used in most of motorcycles is	
a)internal expanding brake	b) block brake
c) band brake	d)disk brake
Correct answer: vd	
Q 20. The percentage of total brake effort that results from self-energizing action depends upon	
a)the location of brake arm pivot	b)coefficient of friction
c)direction of rotation of brake drum	d)all of the above
Correct answer:d	
Q 21. When the frictional force helps to apply the brake, the brake is said to be	
a)partially self energizing	b)self locking
c)back-stop	d)self acting
Correct answer:a	
Q 22. In block brakes, the ratio of shoe width and drum diameter is kept between	

a)0.1 to 0.25	b)0.25 to 0.50
c)0.50 to 0.75	d)0.75 to 1.0
Correct answer:b	
Q 23. In order to prevent the brake arm from grabbing, the moment of frictionforce about the brake arm pivot should be	
a)less than the total required braking effort	b)more than the total required braking effort
c) equal to the total required braking effort	d)none of the above
Correct answer:a	
Q 24. The power transmitted by belt drive depends upon	
a)belt velocity	b)initial belt tension
c)arc of contact	d) all of the above
Correct answer:d	
Q 25. The suitable material for belt used in floor mill is	
a)leather	b)rubber
c)canvas or cotton duck	d)balata gum
Correct answer:c	
Q 26. The creep in the belt is due to	
a)effect of temperature on belt	b)material of belt
c)unequal extensions in the belt due to tight and slack side tensions	d)stresses beyond elastic limit of belt material
Correct answer:c	
Q 27. Which is positive drive?	
a)flat belt drive	b) V belt drive
c)crossed belt drive	d)timing belt
Correct answer:d	
Q 28. When the belt is transmitting maximum power,	
a)the tension in tight side is twice the centrifugal tension	b)the tension in slack side is equal to the centrifugal tension
c)the tension in tight side is thrice the centrifugal tension	d)none of the above
Correct answer:a	

QUESTION BANK

Subject: Design of Machine Elements-II

Q 29. In a horizontal flat belt drive, it is customary to use	
a)bottom side of belt as slack side	b)top side of belt as slack side
c)idler pulley	d)none of the above
Correct answer:b	
Q 30. The objective of 'crowning' of the flat pulleys of belt drive is to	
a)prevent the belt from running off the pulley	b)increase the power transmission capacity
c)increase the belt velocity	d)prevent the belt joint from damaging the belt surface
Correct answer:a	
Q 31. The arms of the pulleys for flat belt drive have (a) (b) (c) (d)	
a)elliptical cross-section	b) major axis in plane of rotation
c) major axis twice the minor axis	d)all the three characteristics
Correct answer:d	
Q 32. In case of V belt drive	
a)the belt should touch the bottom of groove in the pulley	b)the belt should not touch the bottom of groove in the pulley
c)the belt should not touch the sides of groove in the pulley	d)none of the above
Correct answer:b	
Q 33. The belt slip occurs due to	
a)heavy load	b)loose belt
c)driving pulley too small	d)any one of the above
Correct answer:d	
Q 34. Silent chain is made of	
a)links and blocks	b)links, pins, bushes and rollers
c)links	d)inverted tooth overlapping links
Correct answer:d	
Q 35. The number of teeth on driving sprocket should be more than 17 in order to	
a)reduce wear	b)reduce interference

c)reduce variation in chain speed	d)reduce undercutting
Correct answer:c	
Q 36. The variation in chain speed is due to	
a)chordal action	b)creep
c)slip	d)backlash
Correct answer:a	
Q 37. The number of teeth on sprocket should be odd in order to	
a)reduce polygonal effect	b)reduce wear
c)reduce back sliding	d)evenly distribute wear on all sprocket teeth
Correct answer:d	
Q 38. For a chain drive, to have variation of speed less than 1%, the minimum number of teeth on smaller sprocket should be	
a) 15	b) 17
c) 20	d) 24
Correct answer:d	
Q 39. In radial bearings, the load acts	
a)along the axis of rotation	b)perpendicular to the axis of rotation
c)parallel to the axis of rotation	d)a and c
Correct answer:b	
Q 40. In thrust bearings, the load acts	
a)along the axis of rotation	b)perpendicular to the axis of rotation
c)parallel to the axis of rotation	d)a and c
Correct answer:a	
Q 41. Antifriction bearings are	
a)oil lubricated bearings	b)bush bearings
c)ball and roller bearings	d)boundary lubricated bearings
Correct answer:c	
Q 42. A bearing number XX10 indicates that the bearing is having	
a)bore diameter of 10 mm	b)bore diameter of 100 mm
c)bore diameter of 50 mm	d)outer diameter of 100 m
Correct answer:c	

Q 43. The catalogue life of bearing is	
a)minimum life that 90% of the bearings will reach or exceed	b)maximum life for 90% of the bearings
c)average life	d)median life
Correct answer:a	
Q 44. A zero film bearing is a bearing	
a)where the surfaces of journal and the bearing are separated by a thick film of lubricant	b)where the surfaces of journal and the bearing are partially separated by a film of lubricant and there is partial metal to metal contact
c)where the surfaces of journal and the bearing are separated by a film created by elastic deflection of parts	d)where there is no lubricant
Correct answer:d	
Q 45. A thick film bearing is a bearing	
a)where the surfaces of journal and the bearing are completely separated by a film of lubricant	b) where the surfaces of journal and the bearing are partially separated by a film of lubricant and there is partial metal to metal contact
c)where the surfaces of journal and the bearing are separated by a film created by elastic deflection of parts	d)where there is no lubricant
Correct answer:a	
Q 46. The length to diameter ratio for a square bearing is	
a) more than 1	b) less than 1
c)∞	d)1
Correct answer:d	
Q 47. For hydrodynamic lubrication	
a)there should be relative motion between the surfaces of the journal and the bearing and wedge shaped clearance space	b)there should be external source like pump to supply lubricant under pressure

c)there should be elastic deformation of the parts in contact	d)there should be metal to metal contact
Correct answer:a	
Q 48. Boundary lubricated bearing is	
a)thick film bearing	b)thin film bearing
c)hydrodynamic bearing	d)hydrostatic bearing
Correct answer:b	
Q 49. In hydrostatic bearing,	
a)the axis of journal is eccentric with respect to axis of bearing	b)the axis of journal is concentric with respect to axis of bearing
c)the axis can be either eccentric or concentric depending upon speed	d)none of the above
Correct answer:b	
Q 50. Petroff's equation is used to find out	
a)load carrying capacity of the bearing	b)frictional losses in the bearing
c) unit bearing pressure on the bearing	d)pressure distribution around the periphery of the journal
Correct answer:b	
Q 51. Sommerfeld number is	
a) similar to bearing characteristic number	b) similar to Reynold's number
c) dimensionless parameter that contains all the design parameters	d) used to find out dynamic load carrying capacity of the hydrodynamic bearing
Correct answer:c	
Q 52. Which of the following type of gears provide maximum velocity ratio?	
a)spur gears	b)bevel gears
c)worm gears	d)helical gears
Correct answer:c	
Q 53. When the axes of two shafts are non-parallel and non-intersecting, use	
a) helical gears	b) crossed helical gears
c) straight bevel gears	d) spiral bevel gears

Correct answer:b	
Q 54. Which of the following type of gears are free from axial thrust?	
a) herringbone gears	b) Bevel gears
c) worm gears	d) Helical gears
Correct answer:b	
Q 55. In Lewis equation, gear tooth is considered as	
a) simply supported beam	b) cantilever beam
c) curved beam	d) none of the above
Correct answer: b	
Q 56. Worm gears are widely used when	
a) velocity ratio is high	b) space is limited
c) axes of shafts are non-intersecting	d) all the three
Correct answer: d	
Q 57. When bevel gears are used to transmit power between shafts that are intersecting at an angle greater than 900, and if the pitch angle of one of the gears is 900, they are called,	
a)spiral bevel gears	b)crown gears
c)straight bevel gears	d)hypoid gears
Correct answer:b	
Q 58. Miter gears are	
a)spur gears with same number of teeth	b)helical gears with same number of teeth
c)bevel gears with same number of teeth mounted on perpendicular shafts	d)spiral bevel gears with zero spiral angle
Correct answer:c	
Q 59. Reducing pressure angle on gears results in	
a)weaker teeth	b)stronger teeth
c)high velocity ratio	d)high efficiency
Correct answer:a	
Q 60. Beam strength of gear tooth should be	
a)less than effective load consisting of static and dynamic load	b)more than effective load consisting of static and dynamic load

c)more than wear strength of gear tooth	d)more than load due to power transmission
Correct answer:b	

QUESTION BANK

Subject: Fluid Machinery

Q 1. A hydraulic coupling belongs to the category of	
a) power developing machines	b) energy transfer machines
c) power absorbing machines	d) energy generating machines
Correct answer:	b
Q 2. Which of the following pump is preferred for flood control and irrigation applications?	
a) Mixed flow pump	b) Centrifugal pump
c) Axial flow pump	d) Reciprocating pump
Correct answer:	c
Q 3. Slip of a reciprocating pump is defined as the	
a) ratio of actual discharge to the theoretical discharge	b) product of theoretical discharge and the actual discharge
c) difference of theoretical discharge and the actual discharge	d) sum of actual discharge and the theoretical discharge
Correct answer:	c
Q 4. The speed of an imaginary turbine, identical with the given turbine, which will develop a unit power under a unit head, is known as	
a) unit speed	b) normal speed
c) specific speed	d) none of these
Correct answer:	c
Q 5. **The flow rate in gear pump**	
a) Increases with increase in pressure	b) Decreases with increase in pressure

QUESTION BANK

Subject: Fluid Machinery

c) More or less remains constant with increase in pressure	d) Unpredictable
Correct answer:	c
Q 6. **A turbine develops 10000 kW under a head of 25 meters at 135 r.p.m. Its specific speed is**	
a) 175.4 r.p.m.	b) 215.5 r.p.m.
c) 241.5 r.p.m.	d) 275.4 r.p.m
Correct answer:	c
Q 7. **Low specific speed of a pump implies it is**	
a) Centrifugal pump	b) Mixed flow pump
c) Axial flow pump	d) None of the above
Correct answer:	a
Q 8. **Head developed by a centrifugal pump is**	
a) Proportional to diameter of impeller	b) Proportional to speed of impeller
c) Proportional to diameter and speed of impeller	d) None of the above
Correct answer:	c
Q 9. **In centrifugal pumps, maximum efficiency is obtained when the blades are**	
a) Straight	b) Bent forward
c) Bent backward	d) Radial
Correct answer:	c

QUESTION BANK

Subject: Fluid Machinery

Q 10. **Medium specific speed of a pump implies it is**	
a) Centrifugal pump	b) Mixed flow pump
c) Axial flow pump	d) Any one of the above
Correct answer:	b
Q 11. **The optimum value of vane exit angle for a centrifugal pump impeller is**	
a) 10-15°	b) 20-25°
c) 30-40°	d) 50-60°
Correct answer:	b
Q 12. **Which of the following pump is suitable for small discharge and high heads?**	
a) Centrifugal pump	b) Axial flow pump
c) Mixed flow pump	d) Reciprocating pump
Correct answer:	d
Q 13. **In a single casing, multistage pump running at constant speed, the capacity rating is to be slightly lowered. It can be done by**	
a) Designing new impeller	b) Trimming the impeller size to the required size by machining
c) Not possible	d) Some other alterations in the impeller
Correct answer:	b
Q 14. **Which of the following pump is successfully used for lifting water to the turbines?**	
a) Centrifugal pump	b) Reciprocating pump

c) Jet pump	d) Air lift Pump
Correct answer:	c
Q 15. **For small discharge at high pressure, following pump is preferred**	
a) Centrifugal pump	b) Axial flow pump
c) Mixed flow pump	d) Reciprocating pump
Correct answer:	d
Q 16. **If a pump is handling water and is discharging a certain flow Q at a constant total dynamic head requiring a definite B.H.P., the same pump when handling a liquid of specific gravity 0.75 and viscosity nearly same as of water , the horse power required will be**	
a) Same	b) 0.75 B.H.P.
c) B.H.P./0.75	d) 1.5 B.H.P.
Correct answer:	b
Q 17. **In a centrifugal pump, the liquid enters the pump**	
a) At the top	b) At the bottom
c) At the center	d) From sides
Correct answer:	c
Q 18. **The specific speed (*Ns*) of a centrifugal pump is given by**	
a) $(N\sqrt{Q})/H^{2/3}$	b) $(N\sqrt{Q})/H^{3/4}$
c) $(N\sqrt{Q})/H$	d) $(N\sqrt{Q})/H^{5/4}$
Correct answer:	b

QUESTION BANK

Subject: Fluid Machinery

Q 19. **Air vessels in reciprocating pump are used to**	
a) Smoothen flow	b) Reduce acceleration to minimum
c) Increase pump efficiency	d) Save pump from cavitations
Correct answer:	b
Q 20. **Saving of work done and power by fitting an air vessel to double acting reciprocating pump is of the order of**	
a) 39.2%	b) 49.2%
c) 68.8%	d) 84.8%
Correct answer:	a
Q 21. **Impulse turbine requires**	
a) High head and low discharge	b) High head and high discharge
c) Low head and low discharge	d) Low head and high discharge
Correct answer:	a
Q 22. **Reaction turbine requires**	
a) High head and low discharge	b) High head and high discharge
c) Low head and low discharge	d) Low head and high discharge
Correct answer:	d
Q 23. **Which of the following is an impulse turbine?**	
a) Pelton turbine	b) Francis turbine
c) Kaplan turbine	d) Propeller turbine
Correct answer:	a

QUESTION BANK

Subject: Fluid Machinery

Q 24. **Pelton turbine is _____**	
a) Tangential flow	b) Radial flow
c) Axial flow	d) Mixed flow
Correct answer:	a
Q 25. **Which of the following laws derive impulse moment principle?**	
a) Newton's 3rd law	b) Newton's 2nd law
c) Newton's 1st law	d) All of the above
Correct answer:	b
Q 26. **The width of the bucket for a Pelton wheel is generally _____ the diameter of jet.**	
a) Three times	b) Four times
c) Five times	d) Six times
Correct answer:	c
Q 27. **The maximum number of jets, generally, employed in an impulse turbine without jet interference are**	
a) 2	b) 4
c) 6	d) 8
Correct answer:	c
Q 28. **Which place in hydraulic turbine is most susceptible for cavitations?**	
a) Inlet of draft rube	b) Blade inlet
c) Guide blade	d) Penstock
Correct answer:	a
Q 29. **The ratio of the normal force of jet of water on a plate inclined at an angle of 30° as compared to that when the plate is normal to jet, is**	
a) $1/\sqrt{2}$	b) $1/2$

c) 1	d) √2
Correct answer:	b
Q 30. **The depth of the bucket for a Pelton wheel is generally _____ the diameter of jet.**	
a) Equal to	b) 1.2 times
c) 1.8 times	d) Double
Correct answer:	b
Q 31. **Braking jet in an impulse turbine is used**	
a) To break the jet of water	b) To bring the runner to rest in a short time
c) To change the direction of runner	d) None of these
Correct answer:	b
Q 32. **The hydraulic efficiency of an impulse turbine is the**	
a) Ratio of the actual power produced by the turbine to the energy actually supplied by the turbine	b) Ratio of the actual work available at the turbine to the energy imparted to the wheel
c) Ratio of the work done on the wheel to the energy of the jet	d) None of the above
Correct answer:	c
Q 33. **In impulse Turbine, energy available at the inlet is in the form of**	
a) Potential Energy	b) Strain Energy
c) Kinetic energy	d) None of these
Correct answer:	c
Q 34. **A Pelton wheel develops 1750 kW under a head of 100 meters while running at 200 r.p.m. and discharging 2500 liters of water per second. The**	

QUESTION BANK

Subject: Fluid Machinery

unit discharge of wheel is	
a) 0.25 m^3/s	b) 0.5 m^3/s
c) 1.5 m^3/s	d) 2.5 m^3/s
Correct answer:	a
Q 35. **The force exerted by a jet of water (in a direction normal to flow) impinging on a fixed plate inclined at an angle θ with the jet is**	
a) $(waV/2g) \times \sin\theta$	b) $(waV/g) \times \sin\theta$
c) $(waV^2/2g) \times \sin 2\theta$	d) $(waV^2/g) \times \sin\theta$
Correct answer:	c
Q 36. **The speed ratio in case of Francis turbine varies from**	
a) 0.15 to 0.3	b) 0.4 to 0.5
c) 0.6 to 0.9	d) 1 to 1.5
Correct answer:c	
Q 37. **The specific speed of turbine is defined as the speed of a unit**	
a) Of such a size that it delivers unit discharge at unit head	b) Of such a size that it delivers unit discharge at unit power
c) Of such a size that it requires unit power per unit head	d) Of such a size that it produces unit horse power with unit head
Correct answer:D	
Q 38. **The undershot water wheels are those in which**	
a)The wheel runs entirely by the weight of water	b) The wheel runs entirely by the impulse of water
c) The wheel runs partly by the weight of water and partly by the impulse of water	d) None of the above
Correct answerB	

QUESTION BANK

Subject: Fluid Machinery

Q 39. Francis turbine is best suited for	
A medium head 24 to 180m	b)low head up to 30m
c)high head above 180m	d)none of the above
Correct answer:A	
Q 40. In Francis turbine runner, the no. of blades are	
a)2-4	b)4-8
c)8-16	d)16-24
Correct answer:D	
Q 41. Draft tube is used with	
a)impulse turbine	b)Pelton wheel turbine
c)reaction turbine	d)Axial turbine pump
Correct answer:C	
Q 42. Which turbine work against pressure tight atmosphere	
a)Francis turbine	b)Kaplan turbine
c)propeller turbine	d)none of the above
Correct answer:A	
Q 43. **In an outward flow reaction turbine**	
a) The water flows parallel to the axis of the wheel	b) The water enters at the centre of the wheel and then flows towards the outer periphery of the wheel
c) The water enters the wheel at the outer periphery and then flows towards the centre of the wheel	d) The flow of water is partly radial and partly axial
Correct answer:B	
Q 44. **The unit speed of the turbine runner is**	
a) $N/\sqrt{H}$	b) N/H

c) $N/H^{3/2}$	d) N/H^2
Correct answer:A	
Q 45. **The runaway speed of a hydraulic turbine is the speed**	
a) At full load	b) At which there will be no damage to the runner
c) Corresponding to maximum overload permissible	d) At which the turbine will run freely without load
Correct answer:D	
Q 46. **Which of the following is not a reaction turbine?**	
a) Fourneyron turbine	b)
c) Thomson's turbine	d)
Correct answer:D	
Q 47. **The discharge through a reaction turbine _____ with the increase in unit speed.**	
a) Decreases	b)
c) Remain same	d)
Correct answer:A	
Q 48. **The specific speed of a hydraulic turbine depends upon**	
a) Speed and power developed	b) Discharge and power developed
c) Speed and head of water	d) Speed, power developed and head of water
Correct answer:D	
Q 49. **If the ratios of the corresponding forces acting at corresponding points are equal, then the model and the prototype are said to have.**	
a) Geometric similarity	b) Kinematic similarity

QUESTION BANK

Subject: Fluid Machinery

c) Dynamic similarity	d) None of these
Correct answer:C	
Q 50. T**he unit power developed by a turbine is (where *P* = Power developed by the turbine under a head of water (*H*).**	
a) $P/\sqrt{H}$	b) P/H
c) $P/H^{3/2}$	d) P/H^2
Correct answer:C	
Q 51. **The efficiency of a hydraulic press is given by (where *W* = Weight lifted by ram, *P* = Force applied on plunger, *A* = Area of ram, and *a* = Area of plunger)**	
a) $(W/p) \times (A/a)$	b) $(p/W) \times (a/A)$
c) $(W/p) \times (a/A)$	d) $(p/W) \times (A/a)$
Correct answer: C	
Q 52. **A hydraulic coupling belongs to the category of**	
a) Power absorbing machines	b) Power developing machine
c) Energy transfer machines	d) Energy generating machines
Correct answer: C	
Q 53. **A hydraulic accumulator is a device used to store _____ energy which may be supplied to a machine later on.**	
a) Strain	b) Pressure
c) Kinetic	d) None of these
Correct answer: B	
Q 54. **A hydraulic ram is a device used to**	
a) Directly as the air or gas density	b) Inversely as square root of density
c) Inversely as density	d) As square of density
Correct Answer: A	

QUESTION BANK

Subject: Fluid Machinery

Q 55. **A hydraulic intensifier normally consists of**	
a) Two cylinders, two rams and a storage device	b) A cylinder and a ram
c) Two coaxial rams and two cylinders	d) A cylinder, a piston, storage tank and control valve
Correct answer: C	
Q 56. **Hydraulic accumulator is used for**	
a) Accumulating oil	b) Supplying large quantities of oil for very short duration
c) Generally high pressures to operate hydraulic machines	d) Supplying energy when main supply fails
Correct answer: D	
Q 57. **A hydraulic press is a device used**	
a) To store pressure energy which may be supplied to a machine later on	b) To increase the intensity of pressure of water by means of energy available from a large quantity of water at a low pressure
c) To lift larger load by the application of a comparatively much smaller force	d) All of the above
Correct answer: C	
Q 58. **Pressure intensifier increases the pressure in proportion to**	
a) Ratio of diameters	b) Square of ratio of diameters
c) Inverse ratio of diameters	d) Square of inverse ratio of diameters
Correct answer: B	
Q 59. **A hydraulic accumulator normally consists of**	
a) Two cylinders, two rams and a storage device	b) A cylinder and a ram
c) Two coaxial rams and two cylinders	d) A cylinder, a piston, storage tank and control valve
Correct answer: B	
Q 60. Maximum impulse will be developed in hydraulic ram when	
a) Waste valve closes suddenly	b) Supply pipe is long
c) Ram chamber is large	d) Supply pipe is short
Correct answer: A	

QUESTION BANK

Subject: Heat Transfer

Q 1. The material medium between the heat source and receiver is not affected during the process of heat transmission by	
a) Conduction	b) Convection
c) Radiation	d) Conduction as well as convection.
Correct answer: c	
Q 2. Heat transfer in liquids and gases is essentially due to	
a) Conduction	b) Convection
c) Radiation	d) Conduction and radiations put together.
Correct answer: b	
Q 3. A satellite in space exchanges heat with the surroundings essentially by	
a) Conduction	b) Convection
c) Radiation	d) Conduction as well as convection.
Correct answer: c	
Q 4. Steady state heat flow implies	
a) Negligible flow of heat	b) No difference of temperature between two bodies
c)Heat flow rate independent of time	d) Uniform temperature rise of a body
Correct answer: c	
Q 5 Which of the following is not the necessary condition for the Fourier's conduction equation:	
a) Steady state	b) One-dimensional heat flow
c) Constant value of thermal conductivity	d) Constant and uniform temperatures at the wall surfaces

QUESTION BANK

Subject: Heat Transfer

Correct answer: c	
Q 6. Indicate the metal with higher value of thermal conductivity	
a) steel	b) silver
c) copper	d) aluminum
Correct answer: b	
Q 7. Mark the matter with least value of thermal conductivity	
a) Air	b) Water
c) Ash	d) Window glass
Correct answer: a	
Q 8. Which of the following forms of water have the highest value of thermal conductivity.	
a) Boiling Water	b) Steam
c) Solid Ice	d) Melting Ice
Correct answer :c	
Q 9. Identify the very good insulator	
a) saw dust	b) Glass Wool
c) Cork	d) Asbestos Sheet
Correct answer: b	
Q 10. Two walls of same thickness and cross-sectional area have thermal conductivities in the ratio 1:2. If same temperature difference is maintained across the wall faces, the ratio of heat flow Q_1/Q_2 will be	
a) ½	b) 1
c) 2	d) 4
Correct answer: a	
Q 11. The thermal diffusivity of substance is given by	
a) k/ρc	b) kρ/c
c) kc/ρ Correct answer: a	d) ρc/k
Q 12. For steady state heat flow and constant value of thermal conductivity, the temperature distribution for a plane wall is a	

QUESTION BANK

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a) Linear	b) Parabolic
c) logarithmic	d) exponential curve
Correct answer:	
Q 13. For steady state and constant value of thermal conductivity, the temperature distribution associated with radial conduction through a cylinder has a	
a) Linear	b) Parabolic
c) logarithmic	d) exponential curve
Correct answer: b	
Q 14. A steam pipe is to be lined with two layers of insulating materials of different thermal conductivities. For less heat transfer	
a) the better insulating must be put inside	b) the better insulating must be put outside
c) any of the two insulating may be placed inside or outside	d) the temperature of seam must be taken into account while deciding as to which insulating is put where
Correct answer: a	
Q 15. Upto the critical radius of insulation	
a) heat loss decreases with addition of insulation	b) heat loss increases with addition of insulation
c) there occurs a decrease in heat flux	d) conduction heat loss is more than convection heat loss.
Correct answer: b	
Q 16. It is desired to increase the heat dissipation rate over the surface of an electric device of spherical shape of 5 mm radius exposed to convection with h = 10 W/m^2K by encasing it in a spherical sheath of conductivity k = 0.04 W/mK. For maximum heat flow, the diameter of sheath should be	
a) 8 mm	b) 12 mm
c) 16 mm	d) 24mm

QUESTION BANK

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Correct answer: c	
Q 17. What happens when the thickness of insulation on a pipe exceeds the critical value?	
a) there is decrease in the heat flow rate	b) there is increase in the heat flow rate
c) the heat flow rate remains constant	d) the temperature rises at the junction between pipe and insulation
Correct answer: b	
Q 18. Fins are provided on heat transferring surface in order to increase	
a) heat transfer area	b) heat transfer coefficient
c) temperature gradient	d) mechanical strength of the equipment
Correct answer: a	
Q 19. An increase in convective coefficient over a fin	
a) increases effectiveness	b) decreases effectiveness
c) does not influence effectiveness	d) influences only the fin efficiency
Correct answer: b	
Q 20. Which one of the following statements is not true in the context of thermal radiations	
a) thermal radiations are electromagnetic waves	b) thermal radiations travel in free space with a velocity 3×10^8 m/s
c) all bodies emit thermal radiations at all temperatures	d) thermal radiations are not reflected from a mirror
Correct answer: d	
Q 21. A perfectly black body	
a) absorbs all the incident radiations	b) allows all the incident radiations to pass through it
c) reflects all the incident radiations	d) has its surface coated with lamp black or graphite

QUESTION BANK

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Correct answer: a	
Q 22. A diathermanous body	
a) shines as a result of incident radiations	b) gets heated up as a result of absorption of incident radiation
c) allows all the incident radiation to pass through it	d) partially absorbs and partially reflects the incident radiation
Correct answer:c	
Q 23. Choose the false statement	
a) snow is nearly black to thermal radiation	b) absorption of radiation occurs in a very thin layer of material near the surface
c) transmissivity varies with wavelength of incident radiation	d) most of the engineering materials have rough surfaces and these rough surfaces give regular reflections
Correct answer: d	
Q 24. Gases have poor	
a) Absoptivity	b) Reflectivity
c) Transmissivity	d) Asorptivity
Correct answer: b	
Q 25. The ratio of total emissive power of body to the total emissive power of black body at the same temperature is called	
a) Absorptivity	b) Transmissivity
c) Reflectivity	d) Emissivity
Correct answer: d	
Q 26. Four identical pieces of copper painted with different color of paints were heated to the same temperature and then left in the environment to cool. Which of the following paints ill give last cooling?	
a) White	b) Rough

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c) Black	d) Shining
Correct answer:c	
Q 27. The temperature of a radiating surface changes from 400 K to 1200 K. The ratio of total emissive powers at the higher and lower temperatures would be	
a) 3	b) 9
c) 27	d) 81
Correct answer:d	
Q 28. If the temperature of a black body is increased by 50%, the amount of radiation emitted by it would increase by nearly	
a) 50%	b) 100%
c) 200%	d) 500%
Correct answer:d	
Q 29. Two spheres A and B of the same material have radii 1 m and 4 m, and temperatures 4000 K and 2000 K respectively. The energy radiated by sphere A is	
a) Greater than that of sphere B	b) Less than that of sphere B
c) Equal to that of sphere B	d) Becomes exactly equal to double of sphere B
Correct answer:c	
Q 30. Which of the following is a wrong statement? The shape factor is equal to one	
a) For any surface completely enclosed by another surface	b) For infinite parallel planes radiating only to each other
c) For a flat or convex surface with respect to itself	d) Inner cylinder to outer cylinder of a long co-axial cylinder
Correct answer:c	
Q 31. A radiation shield should	
a) Have high transmissivity	b) Absorb all the radiations

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c) Have high reflective power	d) Partially absorb and partially transmit the incident radiations
Correct answer:c	
Q 32. Free convection heat flow depends on all of the following, except	
a) Density	b) Coefficient of viscosity
c) Gravitational force	d) Velocity
Correct answer: d	
Q 33. Which dimensionless number has a significant role in forced convection?	
a) Prandtl number	b) Reynolds number
c) Mach number	d) Peclet number
Correct answer:b	
Q 34. Dropwise condensation usually occurs on	
a) Glazed surface	b) Smooth surface
c) Oily surface	d) Coated surface
Correct answer:c	
Q 35. The normal automobile radiator is a heat exchanger of the type	
a) Direct contact	b) Parallel flow
c) Counter flow	d) Cross flow
Correct answer:d	
Q 36. In a counter flow heat exchanger, cold fluid enters at 30°C and leaves at 50°C, where hot fluid enters at 150°C and leaves at 130°C. The mean temperature difference for this case is	
a) 20°C	b) 80°C
c) 100°C	d) Indeterminate

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Correct answer:c	
Q 37. For a finned surface, it is considered appropriate that area of cross-section be	
a) Maintained constant along the length	b) Increased along the length
c) Reduced along the length	d) It is better to vary the convection coefficient than the area
Correct answer:c	
Q 38 Consider a square section fin split longitudinally and used as two fins. This will result in	
a) Increase in heat transfer	b) Decrease in heat transfer
c) Increase or decrease in heat transfer depending on material of fin	d) Heat flow remains constant
Correct answer: a	
Q 39. Transient conduction means	
a) Very little heat transfer	b) Heat transfer for a short time
c) Heat transfer with a very small temperature difference	d) Conduction when the temperature at a point varies with time
Correct answer:d	
Q 40. Lumped parameter analysis of transient heat conduction in solid stipulates	
a) Infinite thermal conductivity	b) Negligible temperature gradient
c) Small conduction resistance	d) Predominance of convective resistance
e) All of the above	Correct answer:e
Q 41. The emissivity and the absorptivity of a real surface are equal for radiation with identical temperature and wavelength. This law is referred to as	
a) Lambert's law	b) Kirchoff's law
c) Planck's law	d) Wien's displacement law

QUESTION BANK

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Correct answer: b	
Q 42. Sensible heat is the heat required to	
a) change vapour into liquid	b) change liquid into vapour
c) increase the temperature of a liquid of vapour	d) convert water into steam and superheat it
Correct answer: c	
Q 43. Which of the following is the case of heat transfer by radiation	
a) blast furnace	b) heating of building
c) cooling of parts in furnace	d) heat received by a person from fireplace
Correct answer: d	
Q 44. Metals are good conductors of heat because	
a) their atoms collide frequently	b) their atomsare relatively far apart
c) they contain free electrons	d) they have high density
Correct answer: a	
Q 45. Which of the following is a case of steady state heat transfer	
a) I.C. engine	b) air preheaters.
c) . heating of building in winter	d) none of the above..
Correct answer:d	
Q 46. Total heat is the heat required to	
a) change vapour into liquid	b) change liquid into vapour
c) increase the temperature of a liquid or vapour	d) convert water into steam and superheat it
Correct answer:d	
Q 47. Cork is a good insulator because it has	
a) free electrons	b) atoms colliding frequency
c) low density	d) porous body

QUESTION BANK

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Correct answer: d	
Q 48. Thermal conductivity of water in general with rise in temperature	
a) increases	b) decreases
c) remains constant	d) may increase or decrease depending on temperature
Correct answer:d	
Q 49. Heat flows from one body to other when they have	
a) different heat contents	b) different specific heat
c) different atomic structure	d) different temperatures
Correct answer: d	
Q 50. The concept of overall coefficient of heat transfer is used in heat transfer problems of	
a) conduction	b) convection
c) radiation	d) conduction and convection
Correct answer: d	
Q 51. Which of the following is expected to have highest thermal conductivity	
a) steam	b) solid ice
c) melting ice	d) water
Correct answer: b	
Q 52. Thermal diffusivity is	
a) a dimensionless parameter	b) function of temperature
c) used as mathematical model	d) a physical property of the material
Correct answer: d	
Q 53. 50. Emissivity of a white polished body in comparison to a black body is	
a) higher	b) lower
c) same	d) depends upon the shape of body
Correct answer: b	
Q 54. A grey body is one whose absorptivity	
a) varies with temperature	b) varies with wavelength of the incident ray

c) is equal to its emissivity	d) does not vary with temperature and. wavelength of the incident ray
Correct answer: c	
Q 54 Fourier's law of heat conduction is valid for	
a) one dimensional cases only	b) two dimensional cases only
c) three dimensional cases only	d) regular surfaces having nonuniform temperature gradients
Correct answer: a	
Q 56. Total emissivity of polished silver compared to black body is (a)	
a) same	b) higher
c) more or less same	d) very much lower
Correct answer: d	
Q 57. The thermal diffusivities for solids are generally	
a) less than those for gases	b) less than those for liquids
c) more than those for liquids and gases	d) more or less same as for liquids and gases
Correct answer: c	
Q 58. The ratio of the emissive power and absorptive power of all bodies is the same and is equal to the emissive power of a perfectly black body. This statement is known as	
a) Krichoff's law	b) Stefan's law
c) Wien' law	d) Planck's law
Correct answer: a	
Q 59. A grey body is one whose absorptivity	
a) varies with temperature	b) varies with the wave length of incident ray
c) varies with both	d) does not vary with temperature and wave length of the incident ray
Correct answer:d	
Q 60. Log mean temperature difference in case of counter flow compared to parallel flow will be	

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a) same	b) more
c) less	d) depends on other factors
Correct answer: b	

QUESTION BANK

Subject: Operations Management

Q 1. Which of the following functions is not a core function of an organization?	
a) The accounting and finance function	b) The marketing (including sale) function
c)The operation function	d)The product or service development function
Correct answer:A	
Q 2. Most operation produce a mixture of both products and services which of the following business is closest to producing 'pure' services ?	
a) IT company	b) Counselor /therapist
c) Steel company	d)A restaurant
Correct answer:B	
Q 3. Operations can be classified according to their volume and variety of production as well as the degree of variation & visibility . Which of the following operations would be classified as high volume , low variety ?	
a) A front office bank	b) A family doctor
c) A carpenter	d) A fast food restaurant
Correct answer:D	
Q 4. **Which of the following activities is not a direct responsibility of operations management?**	
a) Developing an operations strategy for the operation	b) Planning & controlling the operations
c) Determining the exact mix of products and services that customers will want	d) Designing the operations products , services & process
Correct answer:C	
Q 5. Operations can be classified according to the degree of variations in demand and visibility of the operations as well as their volume and variety of production which of the following operations would be classified as high variation & high visibility?	
a) A front office staff	b) A family doctor
c) A carpenter	d) A fast food restaurant
Correct answer:B	
Q 6. **Which of the following would not be normally be considered a general**	

QUESTION BANK

Subject: Operations Management

characteristics of a service?	
a) Production and consumption are simultaneous	b) Low contact service can often be made more efficient than high contract
c) Production and consumption can always be spatially separated	d) Many services involve both tangible & intangible outputs
Correct answer:C	
Q 7. **Which of the following would not be normally considered as a key feature of operations management?**	
a) Most new technology is implemented	b) World class operations can give an organization competitive advantage
c) Operations researches mathematical techniques for optimizing process	d) Operations is the part of an organization which creates wealth through the management of the transformation process
Correct answer:D	
Q 8. Which of the following is the least likely decision to be made by operations managers ?	
a) Selecting the locations and layout of a facility	b) Designing and improving the jobs of the workspace
c) How to use quality techniques to reduce waste	d) Deciding which market areas to manufacture products for
Correct answer:D	
Q 9. Operations management is applicable	
a) Mostly to the service sector	b) To services exclusively
c) Mostly to the manufacturing sector	d) To the manufacturing & service sectors
Correct answer:C	
Q 10. The field of operations management is shaped by advances in which of the following fields?	
a) Chemistry and physics	b) Industrial engineering & management science
c) Biology and anatomy	d) Information science
Correct answer:B	
Q 11. The five element in the management process are	

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Subject: Operations Management	

a) Plan ,direct , update, lead & surprise	b) Accounting /finance , marketing, operations and management
c) Organize , plan , control, staff and manage	d) Plan, organize, staff , lead and control
Correct answer:C	
Q 12. The responsibilities of the operations manager include	
a) Planning , organizing , staffing , procuring and reviewing	b) Forecasting , designing , planning , organizing , and controlling
c) Forecasting , designing ,operating , procuring , and reviewing	d) Planning , organizing , staffing , leading , and controlling
Correct answer:D	
Q 13. Which of the following is not an element of management process	
a) Pricing	b)Staffing
c)Planning	d)Controlling
Correct answer:A	
Q 14. Which of the following illustrate an activity that does not add value?	
a) Training employees	b) Ordering parts from a supplier
c) Making a part	d) Accumulating parts in front of the next work centre
Correct answer:D	
Q 15. Which of the following statements regarding a pull system is true?	
a) Large lots are pulled from upstream stations	b) Work is pulled to the downstream work stations before it is actually needed
c) Manufacturing cycle time is increased	d) Problems become more obvious
Correct answer:D	
Q 16. Which one is not generally considered to be an advantage of using models for decision making?	
a) Providing a systematic approach to problem solving.	b) Emphasizing quantitative information.
c) Providing an exact representation of reality	d) Enabling managers to answer "what if" questions
Correct answer:C	
Q 17. Which came last in the development of manufacturing techniques?	

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a)Lean production.	b)Division of labor
c)Mass production	d)Craft Production
Correct answer:A	
Q 18. What term describes a vertical expansion of job duties in order to give the worker more responsibility?	
a) Job enlargement	b) Job rotation
c) Job enrichment	d) Job design
Correct answer:C	
Q 19. What are the two basic types of production systems?	
a) Automated and manual	b) . Intermittent and non-intermittent process
c) Normal and continuous process	d) Continuous process and batch
Correct answer:B	
Q 20. What type of process would a paper mill be most likely to use?	
a) Continuous flow	b) Project
c) Job shop	d) Flow shop
Correct answer:A	
Q 21. What technique deals with the problem of supplying sufficient facilities to production lines or individuals that require uneven service?	
a) Supply-demand theory	b) PERT
c) Inventory theory	d) Queuing theory
Correct answer:D	
Q 22. A manufacturer has been receiving excessive numbers of defective standard machine parts from a vendor on a regular basis. What is the most effective way to design a formal inspection system for incoming parts?	
a) Queuing analysis	b) Time series analysis
c) Statistical quality contro	d) Regression analysis
Correct answer:C	
Q 23. A set of simultaneous equations that has more variables than constraints has	
a) no solution	b) an infinite number of solutions
c) . a finite solution	d) an infinite solution
Correct answer:B	
Q 24. In a PERT/CPM network, computing the critical path requires	

a) determining the total project duration	b) assigning the earliest finish time for an activity as the earliest start time for the next
c) that the latest finishing time for an activity not delay the overall project beyond initial expectation	d) a sophisticated and complex computer program
Correct answer:B	
Q 25. At the completion of the forward and backward passes, the slack for an activity is given by the	
a) difference between early start and early finish	b) difference between early start and latest finish
c) difference between latest start and early finish	d) amount of idle labor on the critical path
Correct answer:A	
Q 26. What type of control chart is used to monitor the number of defects per unit?	
a) p-chart	b) R-chart
c) c-chart	d) x-bar chart
Correct answer:C	
Q 27.The operating characteristic (OC) curve shows the probability of	
a) rejection for every possible true percentage of defectives	b) . acceptance for every possible true percentage of defectives
c) making type I errors for various percentages of defectives	d) none of the above
Correct answer:B	
Q 28. A project has three paths: A—B—C has a length of 25 days. A—D—C has a length of 15 days. A—E—C has a length of 20 days. Which of the following statements is correct?	
a) A—D—C is the critical path.	b) . A—B—C has the most slack.
c) . The expected duration of the project is 25 days	d) The expected duration of this project is 60 days
Correct answer:C	
Q 29. If an artificial variable remains in the solution with a positive value after the stopping criterion has been reached, the problem	

QUESTION BANK

Subject: Operations Management

a) is infeasible	b) is optimal
c) needs a new basis	d) has more than one solution
Correct answer:A	
Q 30. What are the two sources of costs in queuing analysis?	
a) . Arrivals and departures	b) Arrivals and idleness
c) Waiting customers and capacity	d) . Equipment breakdowns and departures
Correct answer:C	
Q 31. The transportation model method that is used to evaluate location alternatives minimizes total	
a) sources	b) destinations
c) capacity	d) shipping costs
Correct answer:D	
Q 32. What is simulation?	
a) A quick solution method to problem-solving	b) A formalized deterministic approach to problem-solving
c) A graphical method to problem-solving	d) A trial-and-error approach to problem-solving
Correct answer:D	
Q 33. What priority rule is being used when jobs are processed according to the lowest ratio of due date to remaining processing time?	
a) CR (critical ratio)	b) EDD (earliest due date first)
c) FCFS (first come, first served)	d) S/O (least slack per operation first)
Correct answer:A	
Q 34. Buying according to the requirement is called	
a) Seasonal buying	b) Hand to mouth buying
c) Schedule buying	d) Speculative buying
Correct answer: A	
Q 35. Which of the following statements is true of Lean-Six Sigma?	
a) Lean principles focus on advanced statistical methods.	b) Lean principles and Six-Sigma are separate bodies of knowledge
c) Lean principles have been developed over a lengthy period of time.	d) Lean principles include the 5Ss framework and practices.

Correct answer:D	
Q 36. When the flow of materials is variable	
a) layout by process is most suitable	b) layout by product is most suitable
c) layout by fixed position is most suitable	d) line balancing is most suitable
Correct answer:A	
Q 37. A fixed interval system	
a) adds the same predetermined amount to inventory each time replenishment occurs	b) is suitable for joint replenishment items
c) is triggered at the reorder level	d) requires perpetual monitoring of inventory records
Correct answer:B	
Q 38. The time period between placing an order its receipt in stock is known as	
a) Lead time	b) Carrying time
c) Shortage time	d) Over time
Correct answer:A	
Q 39. The Economic Order Quantity (EOQ) is calculated as Where, D=Annual demand (units), S=Cost per order, h=Annual carrying cost per unit	
a) (2D*S/h)^1/2	b) (DS*/h)^1/2
c) (D*S/2h)^1/2	d) (D*S/3h)^1/2
Correct answer: A	
Q 40. 'Buffer stock' is the level of stock	
a) Half of the actual stock	b) At which the ordering process should start
c) Minimum stock level below which actual stock should not fall	d) Maximum stock in inventory
Correct answer: C	
Q 41. The correct sequence of operations in production planning and control is	
a) Routing-Scheduling-Dispatching-Follow up	b) Scheduling-Routing- Dispatching-Follow up
c) Dispatching-Routing-Scheduling- Follow up	d) Routing-Scheduling-Follow up-Dispatching
Correct answer: A	
Q 42. Loading may be defined as	

a) Sending the raw material to the machine	b) Sending the finished material to the store
c) Assign the work to the facilities	d) Uploading a software in machine control panel
Correct answer: C	
Q 43. The bill of material does not consists of	
a) Part number	b) Part specifications
c) Name of the part	d) Price of the part
Correct answer: D	
Q 44. Master schedule is prepared for	
a) Single product continuous production	b) Multi product batch production
c) Assembly product continuous production	d) Single product batch production
Correct answer: **C**	
Q 45. Which of the following is not true for forecasting?	
a) Forecasts are rarely perfect	b) The underlying casual system will remain same in the future
c) The underlying casual system will remain same in the future	d) Short range forecasts are less accurate than long range forecasts
Correct answer: D	
Q 46. Which of the following is not a forecasting technique?	
a) Judgemental	b) Time series
c) Time horizon	d) Associative
Correct answer: C	
Q 47. In which of the following forecasting technique, data obtained from past experience is analyzed?	
a) Judgemental	b) Time series
c) Associative	d) All of the above
Correct answer: B	
Q 48. Delphi method is used for	
a) Judgemental forecast	b) Time series forecast
c) Associative model	d) All of the above

Correct answer: A	
Q 49. The demand for period t-2 and t-1 is 10 and 12 cases respectively. As per naïve method, the demand for next period 't' is	
a) 10	b) 11
c) 12	d) 14
Correct answer: D	
Q 50. The person who ensures that systems are developed on time, within budget, and with acceptable quality is a	
a) System designer	b) Project Manager
c) System owner	d) System builders
Correct answer: B	
Q 51. The following is the preliminary stage of Production planning	
a) Capacity Planning	b) MRP
c) Scheduling	d) Product development and design
Correct answer: D	
Q 52. The following is the source(s) for developing new or improved product	
a) Research and Development department of the enterprise	b) Consumer suggestions and Complaints
c) Consumer suggestions and Complaints	d) Consumer suggestions and Complaints
Correct answer: D	
Q 53. Product cost can be reduced by considering the following aspect(s) at the design stage	
a) Minimum number of operations	b) Unnecessary tight tolerance should not be provided
c) Design should consist of standard parts	d) All of the above
Correct answer: D	
Q 54. The following is the Durability aspect(s) of a product	
a) Efficiency of the product	b) Easy to understand
c) Ease with which a product can be maintained	d) All of the above
Correct answer: C	
Q 55. The following eases the process of stock control	

QUESTION BANK

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a) Standardization	b) Simplification
c) Both 'A' and 'B'	d) None of the above
Correct answer: C	
Q 56. To get the most profit, a company should_____	
a) Provide little customer service	b) Provide high production costs
c) Provide the lowest inventory investment	d) Provide the highest distribution costs
Correct answer: C	
Q 57. Materials management is also called_____	
a) Distribution planning	b) Control and logistics management
c) Both a and B	d) Neither of the above
Correct answer: C	
Q 58. Which is not a part of 5R's for buying	
a) Right quality	b) Right quantity
c) Right source	d) Right material
Correct answer: D	
Q 59. Which of the following is not an inventory?	
a) Machines	b) Any material
c) Finished products	d) Consumable tools
Correct answer: A	
Q 60. The following classes of costs are usually involved in inventory decisions except	
a) Cost of ordering	b) Setup cost
c) Inventory carrying cost	d) Cost of shortages
Correct answer: C	

QUESTION BANK

Subject:SNME

Q 1. What is the order of convergence of bisection method	
a)1	b)1.5
c)2	d)2.51
Correct answer:a)	
Q 2. Root of the equation xlogx=1.2 by bisection method correct to three decimal places?	
a)2.7561	b)2.456
c)2.7407	d)2.7343
Correct answer:c)	
Q 3. Solve the system x+y+z=7 ,3x+3y+4z=24 ,2x+y+3z=16 using gauss elimination method?	
a)x=3,y=1,z=6	b))x=3,y=1,z=3
c))x=3,y=8,z=3	d))x=0,y=1,z=3
Correct answer:b)	
Q 4. Estimate the value of f(22) from the data x: 20 25 30 35 40 45 f(x): 354 332 291 260 231 204	
a)352.22	b)356.88
c)324.89	d)345.55
Correct answer:a)	
Q 5. What is the order of convergence of newton Raphson method?	
a)1	b)4
c)3	d)2
Correct answer:d)	
Q 6. Using central difference formula obtain f(32)	

QUESTION BANK

Subject:SNME

f(25)=.2707 ,f(35)=.3386 ,f(30)=.3027 ,f(d)=3794	
a.894546	b).4356
c).316536	d).322456
Correct answer:c)	
Q 7.find the eigen values of the matrices using power method $\begin{pmatrix} 6 & 5 \\ 1 & 2 \end{pmatrix}$?	
a)7,1	b)2,6
c)3,4	d)2,5
Correct answer:a)	
Q 8. Use gauss seidal method to solve 9x+4y+z=-17 ,x-2y-6z=14 ,x+6y=4?	
a)x=1,y=-2,z=-3	b)x=-2,y=1,z=-3
c)x=-3,y=-2,z=1	d)x=2,y=-3,z=1
Correct answer:b)	
Q 9. Evaluate square root of 12 using newton iterative method?	
a)3.4641	b)3.4643
c)4.4642	d)3.4644
Correct answer:a)	
Q 10. Sufficient condition for iterative method ?	
a) $\left\|\frac{dy}{dx}\right\| \neq 1$	b) $\left\|\frac{dy}{dx}\right\| \neq 1$
c) $\left\|\frac{dy}{dx}\right\| < 1$	d) $\left\|\frac{dy}{dx}\right\| > 1$

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Correct answer:c)	
Q 11. Which is the method for unequal intervals to interpolate the value?	
a)divided difference farmula	b)central differerence formula
c)langrange interpolation farmula	d) both a) &c)
Correct answer:d)	
Q 12. Find the relative error if 2/3 is approximated to .667?	
a).0005	b).0003
c).0004	d).0006
Correct answer:a)	
Q 13. Evaluate the sum S= $\sqrt{3}+\sqrt{5}+\sqrt{7}$ to 4 significant digits.?	
a).0003	b).0004
c).0002	d).0001
Correct answer:c)	
Q 14. Root of the equation tanx+tanhx=0 correct to 4 decimal places using regula falsi method?	
a)2.345	b)2.365
c)2.367	d)2.378
Correct answer:b)	
Q 15. Absolute error in the common logarithm of a number is ……..the relative error of the given number?	
a)less than half	b) equals to half
c)greater than half	d) no relation
Correct answer:a)	
Q 16. **The number of significant digits in the number 204.020050 is**	

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a) 5	b) 6
c) 8	d) 9
Correct answer: d)	
Q 17. **Jacobi's method is also known as**	
a) Displacement method	b)Simultaneous displacement method
c)Simultaneous method	d)Diagonal method
Correct answer:b)	
Q 18. **In general the ratio of truncation error to that of round off error.**	
a)2:1	b) 1:1
c) 1:2	d) 1:3
Correct answer: a)	
Q 19. **In the Gauss elimination method for solving a system of linear algebraic equations, triangularzation leads to**	
a) Diagonal matrix	b)Lower triangular matrix
c)Upper triangular matrix	d)Singular matrix
Correct answer:c)	
Q 20. **Order of convergence of Regula-Falsi method is**	

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a) 1.321	b) 1.618
c) 2.231	d) 2.312
Correct answer:b)	

Q 21 Match the following

A. Raphson	1. Integration
B. Runge-kutta	2. Root finding
C. Gauss-seidel	3. Ordinary Differential Equations
D. Simpson's Rule	4. Solution of system of Linear Equations

The correct sequence is

a) A2-B3-C4-D1	b)A3-B2-C1-D4
c)A1-B4-C2-D3	d)A4-B1-C2-D3
Correct answer:a)	

Q 22. **The convergence of which of the following method is sensitive to starting value?**

a)False position	b)Gauss seidal method
c) Newton –raphson method	d) All of these
Correct answer:c)	

Q 23. By power method ,the numerically dominant eigen value & eigen vector of the matrix $\begin{pmatrix} 15 & -4 & -3 \\ -10 & 12 & -6 \\ -20 & 4 & -2 \end{pmatrix}$

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a) 20	b) 25
c)35	d)10
Correct answer:a)	
Q 24. The root of equation $x^2-2=0$ by newton Raphson method ,if iteration starts from -1 converge to $x^2-2=0$	
a)-1	b) $\sqrt{2}$
C) -$\sqrt{2}$	d) no convergence
Correct answer:c)	
Q 25. Which of the the following equations applied to the bisection method while solving the root of equation	
a) converges within few iterations	b) guaranteed to work for all continuous functions
c) faster than newton raphson method	d) none of these
Correct answer:b)	
Q 26. If a polynomial of degree *n* has more than *n* zeros, then the polynomial is	
a) oscillatory	b) zero everywhere
c)quadratic	d)not defined
Correct answer: a)	

Q 27. The following *x*-*y* data is given

x	15	18	22
y	24	37	25

The Newton's divided difference second order polynomial for the above data is given by

$f_2(x)=b_0+b_1(x-15)+b_2(x-15)(x-22)$

a)-1.048	b)4.333
c)0.1433	d) 24
Correct answer:b)	

Q 28. The polynomial that passes through the following x-y data

x	18	22	24
y	?	25	123

is given by

The corresponding polynomial using Newton's divided difference polynomial is given by

$f_2(x)=b_0+b_1(x\text{-}18)+b_2(x\text{-}18)(x\text{-}22)$

The value of b_2 is

a) .2500	b) 8.125
c) 24	d) not available with the given information
Correct answer:c)	

Q 29. Velocity vs. time data for a body is approximated by a second order Newton's divided difference polynomial as

The acceleration in m/s^2 at is

a)0.5540 m/s^2	b)39.622 m/s^2
c)36.852 m/s^2	d)not obtainable with the given information
Correct answer:a)	

Q 30. The path that a robot is following on a x-y plane is found by interpolating the following four data points

x	2	45	5.5	7
y	7.5	7.5	6	5

The length of the path from x=2 to x=7 is

a)4.788	b)1.345

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None of these c)	d)2.444
Correct answer:c)	

Q 31. The following data of the velocity of a body is given as a function of time.

Time (s)	0	15	18	22	24
Velocity (m/s)	22	24	37	25	123

If you were going to use quadratic interpolation to find the value of the velocity at seconds, the three data points of time you would choose for interpolation are

a)0, 15, 18	b)15, 18, 22
c)0, 15, 22	d)0, 18, 24
Correct answer:a)	

Q 32. Given n+1 data pairs, a unique polynomial of degree _____ passes through the n+1 data points

a) n+1	b) n
c) n or less	d) n+1 or less
Correct answer: c)	

Q 33. **In which of the following method, we approximate the curve of solution by the tangent in each interval.**

a)Picard's Method	b) Euler's method
c) Newton Method	d) R.K Method
Correct answer: b)	

Q 34. Euler's **method is also known as**

a) R.K Method of ist order	b) R.K Method of 2nd order
c) R.K Method of 3rd order	d) R.K Method of

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	4th order
Correct answer:a)	
Q 35. **The number of significant digits in the number 304.030090 is**	
a) 5	b) 6
c) 8	d) 9
Correct answer:d)	
Q 36. Two fair dice are tossed. Let X be the event that the first die shows an even number, and Y be the event that the second die shows an odd number. The two events X and y are	
a)mutually exclusive	b)mutually exclusive &independant
c) depandant	d) none of these
Correct answer: d)	
Q 37. **The convergence of which of the following method is sensitive to starting value?**	
a)False position	b)Gauss seidal method
c)Newton-Raphson method	d)All of these
Correct answer: c)	
Q 38. **To perform a Chi-square test**	
a)Data conform to a normal distribution	b)Data be measured on a nominal scale
c)Each cell has equal number of frequencies	d)All of these

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Correct answer: d)	
Q 39. **In the Gauss elimination method for solving a system of linear algebraic equations, triangularzation leads to**	
a)Diagonal matix	b)Lower triangular matrix
c)Upper triangular matrix	d)Singular matrix
Correct answer:c)	
Q 40.	
a)A2-B3-C4-D1	b)A3-B2-C1-D4
c) A1-B4-C2-D3	d)A4-B1-C2-D3
Correct answer:a)	
Q 41. **The expected value of the random variable**	
a)Will also be the most likely value of the random variable	b)Is another term for the mean value
c)Is also called the variance	d)Cannot be greater than 1
Correct answer:b)	
Q 42. In a throw of dice what is the probability of getting number greater than 5	

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a) ½	b) 1/3
c)1/5	d) 1/6
Correct answer:d)	
Q 43. Which ONE of the following is the benefit of using simple random sampling?	
a)We can calculate the accuracy of the results.	b)The results are always representative.
c) Interviewers can choose respondents freely.	d) Informants can refuse to participate.
Correct answer:a)	
Q 44. Three houses are available in a locality. Three persons apply for the houses. Each applies for one house without consulting others. The probability that all the three apply for the same house is	
a) 2/9	b) 1/9
c)8/9	d) 7/9
Correct answer:b)	
Q 45. A random variable X has Poisson distribution with mean 2. Then P (x > 1.5) equals	
a) 2/e2	b)0
c)1-3/ e2	d)3/e2
Correct answer:c)	
Q 46. The mean and variance of a random variable x having a binomial distribution are 4 and 2 respectively. Then P (x = 1) is (a) 256 37 (b) 256 219 (c) 256 128 (d) 256 28	
a)37/256	b) 219/256

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c) 128/256	d) 28/256
Correct answer:d)	
Q 47. Let A and B be two events such that P (A∪ B) = 6 1 , P (B ∩ A) = 4 1 and P (A) = 4 1 , where A stands for comp ement of event A. Then events A and B are	
a) equally likely & mutually exclusive	b)equally likely but not independant
c)independent but not equally likely	d)mutually exclusive&independant
Correct answer:c)	
Q 48.A bag contains 4 red and 3 black balls. A second bag contains 2 red and 4 black balls. One bag is selected at random. If from the selected bag one ball is drawn, then the probability that the ball drawn is red is	
a)1/42	b)3/41
c)9/42	d)19/42
Correct answer:d)	
Q 49. A box contains 6 nails and 10 nuts. Half of the nails and half of the nuts are rusted. If one item is chosen at random, then the probability that it is rusted or a nail is	
a) 3/16	b) 5/16
c) 11/16	d) 14/16
Correct answer:c)	
Q 50. If the integers m and n are chosen at random between 1 and 100, then the probability that the number of the form 7 m + 7 n is divisible by 5 equals	
a) 1/4	b) 1/7
c) 1/8	d) 1/49

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Correct answer:a)	
Q 51.The S.D. of Binomial distribution is	
a) $\sqrt{npq}$	b) $\sqrt{np}$
c) npq	d) pq
Correct answer: a)	
Q 52. If the mean of a Poisson distribution is m, then S.D. of this distribution is	
a) m^2	b))$\sqrt{m}$
c) m	d) none of these
Correct answer: c)	
Q 53. Linear form of $y=ab^x$	
a) log y=loga+xlogb	b) logy=loga+blogx
c)y=a+bx	d) y=loga-xlogb
Correct answer: a)	
Q 54. If y=a+bx, $\sum x=50$, $\sum y=80$, $\sum xy=1030$, $\sum x^2$ and n=10, then	
a) $a=1+\sqrt{6}$, $b=1-\sqrt{6}$	b) a=1, b=6
c) a=6, b=1	d)) $a=1-\sqrt{6}$, $b=1+\sqrt{6}$
Correct answer: a)	
Q 55. The probability that A happens is 1/3. The odds against happening of A are	
a) 2:1	b) 2:3
c) 3:2	d) 5:2
Correct answer: b)	
Q 56. Which of the following result is correct?	
a) $\Delta x^n=nx^{n-1}$	b)) $\Delta x^n=x^{n-1}$
c)) $\Delta^n e^x=e^x$	d)) $\Delta \cos x=-\sin x$
Correct answer: a)	

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Q 57. As soon as a new value is found by iteration, it is used immediately in the following equations, this method is called	
a) Gauss- Jordan method	b) Gauss- Seidal method
c) Jacobi's method	d) Relaxation method
Correct answer: b)	
Q 58. If X is a binomial variate with p=1/5 for the experiment of 50 trials, then the standars deviation is	
a) 8	b) 4
c) $2\sqrt{2}$	d) 2
Correct answer: c)	
Q 59. Which of the following is a step by step method:	
a) Taylor's method	b) Adams Basforth
c) Picard's method	d) none
Correct answer: b)	
Q 60. Δ=	
a) E-1	b) E+1
c) E	d)none
Correct answer: a).	

QUESTION BANK

Subject: Human Resource Management

Q 1. According to Herzberg's Two Factor Theory, what is the role of hygiene factors?	
a) their presence leads to feelings of neutrality	b) their absence leads to feelings of satisfaction
c) their presence leads to feelings of satisfaction	d) their absence leads to feelings of neutrality
Correct answer: a. their presence leads to feelings of neutrality	
Q 2. What is defined as the organization's attempt to add to, maintain, or readjust its total human resource complement in accordance with its strategic business objectives?	
a) recruitment	b) selection
c) staffing	d) training and development
Correct answer: c. staffing	
Q 3. Due Diligence activity in HR is a part of the following process	
a) Recruitment and Selection	b) Performance Appraisal
c) Training and Development	d) Job Analysis
Correct answer: a. Recruitment and Selection	
Q 4. Recognition of Achievement' has been stated by Herzberg as under the following factor cluster	
a) Motivation factor	b) Hygiene factor
c) Balancing factor	d) All of above
Correct answer: a. Motivation factor	
Q 5. Absenteeism and high turnover can constitute which of the following forms of conflict?	
a) Organised conflict	b) Latent conflict
c) Individual conflict	d) Intra group conflict
Correct answer: b. Latent conflict	
Q 6. Who is an adult as per Factories Act, 1948 ?	

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a) Who has completed 18 years of age	b) who is less than 18 years
c) who is more than 14 years	d) who is more than 15 years
Correct answer: a. Who has completed 18 years of age	
Q 7. The actual achievements compared with the objectives of the job is	
a) Job performance	b) Job evaluation
c) Job description	d) None of the above
Correct answer: a.Job Performance	
Q 8. The following is (are) concerned with developing a pool of candidates in line with the human resources plan	
a) Development	b)Training
c)Recruitment	d) All of the above
Correct answer: c. Recruitment	
Q 9. Majority of the disputes in industries is (are) related to the problem of	
a) Wages	b) Salary
c) Benefits	d) all of the above
Correct answer: d. All of the above	
Q 10. Section _____ of the Industrial Disputes Act 1947, states that an employer should only retrench employees who have been most recently hired	
a) 27-F	b) 26-G
c) 25-H	d) 25-G
Correct answer: d. 25-G	

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Q 11. Performance development plan is set for the employee by his immediate boss.	
a) Employer	b) Department Head
c) Immediate boss	d) All of the above
Correct answer: c. Immediate Boss	
Q 12. The _____ program once installed must be continued on a permanent basis.	
a) Job evaluation	b) Training & Development
c) Recruitment	d) All of the above
Correct answer: a. Job evaluation	
Q 13. The three important components in aligning business strategy with HR practice	
a)Business Strategy, Human Resource Practices, Organisational Capabilities	b)Marketing Strategy, Human Resource Practices, Organisational Capabilities
c) Business Strategy, Human Resource Practices, Organisational structure	d)arketing Strategy, Human Resource Practices, Organisational structure
Correct answer: a.Business Strategy, Human Resource Practices, Organizational Capabilities	
Q 14. The basic managerial skill(s) is(are)	
a) To supervise	b) To stimulate
c) To motivate	d) All of the above

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Correct answer: d. All of the above	
Q 15. During the lay off period, the employer has to pay ____ of the basic wages.	
a) One fourth	b) Half
c) Three fourth	d) One third
Correct answer: b. Half	
Q 16. _____ involves a one to one discussion between the participant and administrator.	
a) Counseling	b) Training
c) Motivation	d) All of the above
Correct answer: a. Counselling	
Q 17. _____ appraisal done separately will provide feedback on the potential of these managers.	
a) Managerial	b) Potential
c) General	d) Administration
Correct answer: b. Potential	
Q 18. During which of the following stage, the firm plans the proposed changes into practice	
a) Clarification	b) Monitoring
c) Assessment	d) Design
Correct answer: d. Design	
Q 19. During which of the following stage, the firm identifies and confirms the overall	

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business direction	
a) Clarification	b) Monitoring
c) Assessment	d) Design
Correct answer: a Clarification	
Q 20. The role of the organization in career planning is to introduce & strengthen systems to ensure _____ of employees	
a) Career Progression	b) Self development
c) Economical Development	d) Skill enhancement
Correct answer: a. Career Progression	
Q 21. The process of analyzing jobs from which job descriptions are developed are called_____.	
a) Job evaluation	b) Jab enrichment
c) Job Analysis	d) Job enlargement
Correct answer: c. Job Analysis	
Q 22. …….. strives to have right number & right kind of people at the right place &at the right time.	
a) Human Resource Acquisition	b) Human Resource Planning
c) Human Resource Development	d)) Human Resource Planning
Correct answer: d. Human Resource Planning	
Q 23.What is meant by the term 'management by objectives'?	
a) A system of giving the authority to carry out certain jobs by those lower down the management hierarchy	b) The system of management that is based on bringing together experts into a

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	team.
c) The setting of objectives to bring about the achievement of the corporate goals	d) The control of the organization by those in the 'head office'
Correct answer: C. The setting of objectives to bring about the achievement of the corporate goals	
Q 24. . Most management teams use 'appraisal' but what is meant by this term?	
a) A system used to improve the performance of personnel.	b) The main way in which an employees wages are determined.
c)) A system of reward points offered by retailers to attract customer loyalty	d)) The evaluation of an individual employee's performance over a given period of time.
Correct answer: d. The evaluation of an individual employee's performance over a given period of time.	
Q 25. Ineffective planning of workforce would be highlighted by	
a) Recruitment and selection problems	b) The need to outsource some of the production
c) A need to offer retraining to current employees	d) An opportunity to increase the use of mechanization.
Correct answer: a) Recruitment and selection problems	
Q 26. Which of the following will influence the method of recruitment and selection used by a company?	
a) The state of the economy	b) The size of the organization
c) The type of training programmes used by the company.	d) The possible expansion of business abroad.

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Correct answer: b. The size of the organization	
Q 27. What does term authoritarian leadership mean?	
a) A style of leadership where the leader keeps a very tight control on all information and decision-making	b) A system of leadership that allows maximum participation by all employees
c) A chain of command that is flat and allows considerable personal freedom to make decisions	d) The selling of debts to an agency, who take responsibility for their collection
Correct answer: a. A style of leadership where the leader keeps a very tight control on all information and decision-making	
Q 28. Piecework is a payment system where the worker is	
a) paid overtime for any hours worked beyond 40 per week	b) rewarded for good conduct
c) is paid a minimum of Skk 55 per hour	d) is paid for what he or she achieves
Correct answer :d is paid for what he or she achieves	
Q 29. “Focus on Social Environment” is related to the	
a) Human Relations	b) Unity of Direction
c) Unity of Command	d) None of the above
Correct answer: a. Human Relations	
Q 30. Enablers of global HRM includes the following, except…	
a) information exchange	b) HR affordability
c)central HR philosiphy	d)e-enabled HR and knowledge transfer
Correct answer: a. Information exchange	
Q 31. Which are the factors by which the process of job design can be affected?	
a)Organisational	b) Environmental

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c) Behavioural	d) All of the above
Correct answer: d. All of the above	
Q 32 An advantage of recruitment from outside the company is.	
a) that it is cheaper than internal recruitment	b) that it brings in new experience and skills to the firm.
c) that there is no need to advertise the vacancy.	d) that it avoids jealousy within the firm.
Correct answer: b. that it brings in new experience and skills to the firm.	
Q 33. What is meant by the term delegation?	
a) A system of management that relies on consulting employees before making decisions.	b) The process of using goals as the best way of motivating managers to achieve corporate targets/objectives.
c) The giving of tasks by a manager to a subordinate	d) A style of management supported by Taylor.
Correct answer: c.The giving of tasks by a manager to a subordinate	
Q 34. Making decisions on the basis of experience, feelings and accumulated judgement is called as _____.	
a) Decision making	b) Structured problems
c) Intuitive decision making	d) None of the above
Correct answer: c.Intuitive decision making	
Q 35. _____ is a performance measure of both efficiency and effectiveness.	
a) Employee productivity	b) Organisational citizenship

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c) Organisational behaviour	d) . None of the above
Correct answer: a. Employee productivity	
Q 36. _____ is the process of forecasting an organisations future demand for, and supply of, the right type of people in the right number.	
a) Recruitments	b) Human Resource Planning
c) Human Resource Management	d) Human Capital Management
Correct answer: b. Human resource planning	
Q 37. Which of the below mentioned option is not a retention plan?	
a) Performance appraisal	b) Compensation plan
c) Induction crisis	d) Voluntary retirement Scheme
Correct answer: d. Voluntary retirement Scheme	
Q 38 HRM tell the.....	
a) Definitions and functions	b) Scope and orientation
c) Functions and objectives	d) . None of the above
Correct answer: b. Scope and orientation	
Q 39. Which of these is a HR Model?	
a) The Guest Model	b) Open - System Theory
c) Mc Gregor's theory X and theory Y	d) None of the above
Correct answer: a. The Guest Model	
Q 40. Which of the following act deals with recruitment and selection?	
a) Child labour act	b) The apprentices act
c) . Mines act	d) . All of the above
Correct answer: d. All of the above	
Q 41. Labor unions use _____ to protect the rights of their members.	

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a) functional operations	b) new product development
c) collective bargaining	d) process
Correct answer: C. Collective Bargaining	
1. Q 42. The selection process is _____.	
a) determining who is best for a job	b) not related to performance in the job
c) an exercise in prediction	d) determining how to best train employees
Correct answer: a. determining who is best for a job	
2. Q 43. _____ is the proven relationship between the selection device and some relevant job selection criterion.	
a) Responsibility	b) unreliability
c) Reliability	d) Validity
Correct answer: d. Validity	
Q 44. Interviews are valid predictors of success in the workplace if _____.	
a) some illegal questions are asked	b) questions are unstructured
c) questions are structured	d) they are short
Correct answer: c. Questions are structured	
Q 45. _____ familiarizes the employee with the goals of the work unit, clarifies how his or her job contributes to the unit goals, and includes an introduction to his or her new co-workers.	

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a) Organizational orientation	b) Work unit orientation
c) Procedural orientation	d) An assessment center
Correct answer: b. Work unit orientation	
Q 46. What traditional training method involves employees working with an experienced worker who provides information, support, and encouragement?	
a) e-learning	b) experiential exercises
c) mentoring and coaching	d) on-the-job training
Correct answer: c. Mentoring and coaching	
Q 47. The use of _____ focuses the evaluator's attention on key behaviors that distinguish effective from ineffective work performance	
a) simple analysis	b) job analysis
c) Critical incidents	d) graphic rating scales
Correct answer: c.Critical incident.	
Q 48. A performance appraisal method that allows the evaluator to rate employees on an incremental scale is called a _____.	
a) written essay	b) critical incident
c) graphic rating scale	d) militiaperson comparison
Correct answer: c. Graphic rating scale	
Q 49. An organization's compensation system has been shown to have an impact on its _____.	
a) turnover	b) profits
c) strategic performance	d) productivity
Correct answer: c. Strategic Performance	
Q 50. Skill-based pay systems rely on the employee's _____ to define his	

or her pay category.	
a) job title	b)job skills
c) job performance	d) job description
Correct answer: b. Job Skills	
Q 51. What is a suggestion offered for a successful management career?	
a) have your boss support you	b) develop a network
c) stay in your first job for at least seven years	d) take the first job you offered
Correct answer: b. Develop a network	
Q 52. A written statement of what a job holder does, how it is done, and why it is done is known as _____.	
a) job specification	b) process departmentalization
c) goal oriented definition	d) job description
Correct answer: d. Job description	
Q 53. A list of the minimum qualifications or requirements needed by an employee to perform a job is known as a _____.	
a) job analysis	b) job description
c) responsibility factor list	d) job specification
Correct answer: d. Job Specification	
Q 54. As a source of potential job candidates, _____ generates the best referrals, because a good referral reflects on the source of the recommendation	
a) the company web site	b) the Internet
c) employee referrals	d) professional recruiting organizations
Correct answer: c. Employee referrals	
Q 55. _____ indicates how consistent a selection device measures a criterion	
a)operational scoring	b) Qualification

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c) Reliability	d) Validity
Correct answer: c. Relaibility	
Q 56. A good interviewer would ask _____.	
a) “What type of work have you done before?”	b) “Do you own your own home?”
c) “Do you have a physical disability that would prevent you from doing this job?”	d) “Have you ever filed a workman’s compensation claim?”
Correct answer: a. “What type of work have you done before?”	
Q 57. If a training event includes learning to be a better listener or learning to interact effectively with team members and customers, it is attempting to teach _____.	
a) technical skills	b) interpersonal skills
c)problem- solving skills	d) observational skilss
Correct answer: b. Interpersonal skills	
Q 58. _____ is a process of setting standards and measuring employee performance to arrive at performance standards.	
a) Time and motion study	b) Benchmarking
c) Legal influence arrangements	d)A performance management system
Correct answer: d. A performance management system	
Q 59. The beginning point for any human resource planning process is the examination of the current human resource status by making a _____.	
a) Strategic plan	b) Human resource inventory
c) Product evaluation	d) Analysis of customer demands

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Correct answer: b. Human Resource Inventory	
Q 60. Job analysis is concerned with which of the following human resource planning aspects?	
a) deciding how well someone is performing his or her job	b) what behaviours are necessary to perform a job
c) hiring someone to do a job	d) estimating pay on job level in an organization
Correct answer: b. what behaviours are necessary to perform a job	

QUESTION BANK

Subject: IEM

Q 1. The aim of value engineering is to	
a) find the depreciation value of a machine	b) determine the selling price of a product
c) minimise the cost without change in quality of the product	d) all of the above
Correct answer: c	
Q 2. Production cost refers to prime cost plus	
a) factory and administration overheads	b) factory, administration, sales overheads and profit
c) factory overheads	d) factory, administration and sales overheads
Correct answer: c	
Q 3. In time study, the rating factor is applied to determine	
a) merit rating of the worker	b) fixation of incentive rate
c) standard time of a job	d) normal time of a worker
Correct answer: b	
Q 4. The main object of scientific layout is	
a) to produce better quality of product	b) all of these
c) to minimise production delays	d) to utilise maximum floor area
Correct answer: b	
Q 5. In value engineering, the term value refers to	
a) manufacturing cost of the product	b) utility of the product
c) selling price of the product	d) total cost of the product
Correct answer: b	
Q 6. Gantt chart is used for	
a) production schedule	b) inventory control
c) machine repair schedules	d) material handling
Correct answer: a	
Q 7. Role of an industrial engineer	
a) Advisor	b) Motivator
c) Innovator	d) All of above
Correct answer: d	
Q 8. Which of the following organizations is best suited for steel plants	
a) line organisation	b) functional organisation
c) line and staff organisation	d) line, staff and functional organisation

QUESTION BANK

Subject: IEM

Correct answer: a	
Q 9. A systematic job improvement sequence will consist of	
a) time study	b) motion study
c) job enrichment	d) all of these
Correct answer: d	
Q 10. Work sampling is applied for	
a) finding out time standards, specially where the job is not repetitive and where time study by stop watch method is not possible	b) all of the these
c) estimation of the percentage utilisation of machine tools	d) estimating the percentage of the time consumed by various job activities
Correct answer: b	
Q 11. When slack of an activity is negative	
a) the activity is critical and any delay in its performance will delay the completion of whole project	b) it represents a situation where extra resources are available and the completion of project is not delayed
c) all of the above	d) it represents that a programme falls behind schedule and additional resources are required to complete the project in time
Correct answer: d	
Q 12. **The procedure of modifying work content to give more meaning and enjoyment to the job by involving employees in planning, organisation and control of their work, is termed as.**	
a) job rotation	b) job enrichment
c) job evaluation	d) job enlargement
Correct answer: d	
Q 13. Functions of management	
a) Planning	b) organising
c) staffing	d) All of these
Correct answer: d	
Q 14. The type of organization preferred for a steel industry, is	

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a) line organisation	b) functional organisation
c) line and staff organisation	d) line, staff and functional organisation
Correct answer: d	
Q 15. Fixed position layout is also known as	
a) analytical layout	b) static product layout
c) synthetic layout	d) none of these
Correct answer: b	
Q 16. Which one of the following chart gives simultaneously information about the progress of work and machine loading?	
a) Man-machine chart	b) Process chart
c) Machine load chart	d) Gantt chart
Correct answer: a	
Q 17. Probabilistic time for completion of any activity can be found out from	
a) most likely time	b) all of these
c) pessimistic time	d) optimistic time
Correct answer: b	
Q 18. The chart which gives an estimate about the amount of materials handling between various work stations is known as	
a) process chart	b) travel chart
c) flow chart	d) operation chart
Correct answer: b	
Q 19. Type of process chart	
a) flow process chart	b) two handed process chart
c) outline process chart	d) all of these
Correct answer: d	
Q 20. A diagram showing the path followed by men and materials while performing a task is known as	
a) travel chart	b) string diagram
c) flow process chart	d) flow diagram
Correct answer: d	

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Q 21**The aim of value engineering is to**	
a) find the depreciation value of a machine	b) determine the selling price of a product
c) minimise the cost without change in quality of the product	d) all of the above
Correct answer: c	
Q 22**. In time study, the rating factor is applied to determine**	
a) standard time of a job	b) merit rating of the worker
c) fixation of incentive rate	d) normal time of a worker
Correct answer: c	
Q 23. **Type of value used in value engineering**	
a) Use value	b) cost value
c) exchange value	d) all of these
Correct answer: d	
Q 24. **The main object of scientific layout is**	
a) to produce better quality of product	b) to utilise maximum floor area
c) to minimise production delays	d) all of these
Correct answer: d	
Q 25. **In value engineering, the term value refers to**	
a) manufacturing cost of the product	b) selling price of the product
c) total cost of the product	d) utility of the product
Correct answer: d	
Q 26**. In inventory control theory, the economic order quantity is**	
a) average level of inventory	b) optimum lot size
c) capacity of a warehouse	d) lot size corresponding to break-even analysis
Correct answer: b	
Q 27 **Production cost refers to prime cost plus**	
a) factory overheads	b) factory and administration overheads
c) factory, administration and sales overheads	d) factory, administration, sales overheads and

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Subject: IEM

	profit
Correct answer: a	
Q 28. **A systematic job improvement sequence will consist of**	
a) motion study	b) time study
c) job enrichment	d) all of these
Correct answer: d	
Q 29. **Work sampling is applied for**	
a) estimation of the percentage utilisation of machine tools	b) estimating the percentage of the time consumed by various job activities
c) finding out time standards, specially where the job is not repetitive and where time study by stop watch method is not possible	d) all of the above
Correct answer: d	
Q 30. **Process layout is employed for**	
a) Batch production	b) Continuous type of product
c) Effective utilization of machines	d) All of the above
Correct answer: a	
Q 31. **PERT is the**	
a) Time oriented technique	b) Event oriented technique
c) Activity oriented technique	d) Target oriented technique
Correct answer: b	
Q 32. **In product layout**	
a) Specialized and strict supervision is required	b) Machines cannot be used to their maximum capacity
c) Manufacturing cost rises with a fall in the	d) All of the above

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volume of production	
Correct answer: d	
Q 33. **Emergency rush order can be pushed more effectively in**	
a) Job production	b) Automatic production
c) Continuous production	d) Intermittent production
Correct answer: d	
Q 34. **TMU in method time measurement stands for**	
a) Time motion unit	b) Time measurement unit
c) Time movement unit	d) Technique measurement unit
Correct answer: b	
Q 35. **The term 'value' in value engineering refers to**	
a) Total cost of the product	b) Total cost of the product
c) Utility of the product	d) Manufactured cost of the product
Correct answer: c	
Q 36. **Percent idle time for men or machines is found by**	
a) Work sampling	b) Time study
c) Method study	d) Work study
Correct answer: a	
Q 37. **Which of the following charts are used for plant layout design?**	
a) Operation process chart	b) Man machine chart
c) Travel chart	d) All of these
Correct answer: d	
Q 38. **M.T.M. is used to**	
a) Improve existing methods	b) Establish time standards
c) Develop effective methods in advance of the beginning of production	d) All of the above

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Correct answer: d	
Q 39. **The determination of standard time in a complex job system is best done through**	
a) Stop watch time study	b) Analysis of micro-motions
c) Grouping timing technique	d) Analysis of standard data system
Correct answer: d	
Q 40. **Production cost refers to prime cost plus**	
a) Factory overheads	b) Factory and administration overheads
c) Factory, administration and sales overheads	d) Factory, administration, sales overheads and profit
Correct answer: a	
Q 41. **Acceptance sampling is widely used in**	
a) Batch production	b) Job production
c) Mass production	d) All of the above
Correct answer: c	
Q 42. **Work study is done with the help of**	
a) Process chart	b) Material handling
c) Stop watch	d) All of the above
Correct answer: c	
Q 43. **Product layout is also known as**	
a) Analytical layout	b) Synthetic layout
c) Static product layout	d) None of these
Correct answer: b	
Q 44. **A low unit cost can be obtained by following**	
a) Product layout	b) Functional layout
c) Automatic material handling equipment	d) Specialization of operation
Correct answer: a	
Q 45. **The procedure of modifying work content to give more meaning and enjoyment to the job by involving employees in planning, organisation**	

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and control of their work, is termed as	
a) Job enlargement	b) Job enrichment
c) Job rotation	d) Job evaluation
Correct answer: b	
Q 46. **The main advantage of line organisation is its**	
a) Effective command and control	b) Defined responsibilities at all levels
c) Rigid discipline in the organisation	d) All of the above
Correct answer: d	
Q 47. **Which of the following type of layout is suitable for automobile manufacturing concern?**	
a) Product layout	b) Process layout
c) Fixed position layout	d) Combination layout
Correct answer: a	
Q 48. **The average time recorded by work study man for an operation is called**	
a) Standard time	b) Normal time
c) Representative time	d) None of these
Correct answer: c	
Q 49. **Indirect expenses include**	
a) Factory expenses	b) Selling expenses
c) Administrative expenses	d) All of these
Correct answer: d	
Q 50. **Time study is carried out to determine the time required to complete job by**	
a) A slow worker	b) A fast worker
c) An average worker	d) An apprentice
Correct answer: c	
Q 51. **The value engineering technique in which experts of the same rank assemble for product development is called**	
a) Delphi	b) Brain storming

QUESTION BANK

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c) Morphological analysis	d) Direct expert comparison
Correct answer: b	
Q 52. **In time study, the rating factor is applied to determine**	
a) Standard time of a job	b) Merit rating of the worker
c) Fixation of incentive rate	d) Normal time of a worker
Correct answer: c	
Q 53. **Which of the following organizations is best suited for steel plants**	
a) Functional organization	b) Line organization
c) Staff organization	d) Line, staff and functional organizations
Correct answer: d	
Q 54. **What does symbol 'D' imply in work study?**	
a) Inspection	b) Transport
c) Delay/temporary storage	d) Permanent storage
Correct answer: c	
Q 55. **The grouping of activities into organizational units is called**	
a) Corporate plans	b) Higher level management
c) Functional authority	d) Departmentation
Correct answer: d	
Q 56. **. Pick up the incorrect statement about advantages of work sampling**	
a) Permits a fine breakdown of activities and delays	b) Simultaneous study of many operators may be made by a single observer
c) Calculations are easier, method is economical and less time consuming	d) No time measuring devices are generally needed
Correct answer: a	
Q 57. **. Abbreviated work factor data is applied for**	
a) Material handling operation	b) Maintenance operation

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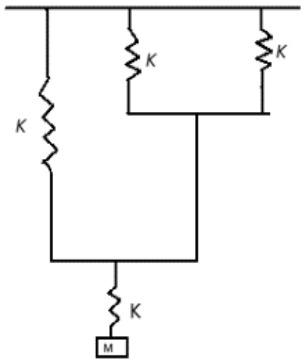
c) Packing and shipping operation	d) All of these
Correct answer: d	
Q 58. **Merit rating is the method of determining the**	
a) Relative values of a job	b) Workers performance on a job
c) Worth of a machine	d) Value of overall production
Correct answer: b	
Q 59. **Earliest finish time can be regarded as**	
a) Earliest start time + duration of activity	b) Earliest start time duration of activity
c) Latest finish time + duration of activity	d) Latest finish time duration of activity
Correct answer: a	
Q 60. **In Halsey 50-50 plan, output standards are established**	
a) By time study	b) From previous production records
c) From one's judgment	d) All of the above
Correct answer: b	

QUESTION BANK

Subject: Mechanical Vibrations

Q 1. **Calculate equivalent stiffness of the spring for the system shown below, which has spring stiffness of 3000 N/m**



a) 1000 N/m	b) 2250 N/m
c) 2000 N/m	d) None of the above
Correct answer: b) 2250 N/m	

Q 2. **Two springs have spring stiffness of 1500 N/m and 2000 N/m respectively. If they are connected in series, what is the spring stiffness if they are replaced by an equivalent system 3500 N/m.**

a) 3500 N/m	b) 1166 N/m
c) 857.63 N/m	d) None of the above
Correct answer: c) 857.63 N/m	

Q 3. **Which type of vibrations are also known as transient vibrations?**

a) Undamped vibrations	b) Damped vibrations
c) Torsional vibrations	d) Transverse vibrations
Correct answer: b) Damped vibrations	

Q 4. **During transverse vibrations, shaft is subjected to which type of stresses?**

a) Tensile stresses	b) Torsional shear stress
c) Bending stresses	d) All of the above
Correct answer: c) Bending stresses	

Q 5. **Which of the following relations is true when springs are connected parallelly? where K = spring stiffnes**

a) $K_e = K_1 + K_2$	b) $(1 / K_e) = (1/K_1) + (1/ K_2)$
c) $K_e = (1/K_1) + (1/ K_2)$	d) None of the above
Correct answer: a) $K_e = K_1 + K_2$	

Q 6. **What are deterministic vibrations?**

a) Vibrations caused due to known exciting force	b) Vibrations caused due to unknown exciting force
c) Vibrations which are aperiodic in nature	d) None of the above
Correct answer: a) Vibrations caused due to known exciting force	

QUESTION BANK

Subject: Mechanical Vibrations

Q 7. **Which of the following vibrations are classified according to magnitude of actuating force?**	
a) Torsional vibrations	b) Deterministic vibrations
c) Transverse vibrations	d) All of the above
Correct answer: b) Deterministic vibrations	
Q 8. **In which type of vibrations, amplitude of vibration goes on decreasing every cycle?**	
a) Damped vibrations	b) Undamped vibrations
c) Both a. and b	d) None of the above
Correct answer: a) Damped vibrations	
Q 9. **What are discrete parameter systems?**	
a) Systems which have infinite number of degree of freedom	b) Systems which have finite number of degree of freedom
c) Systems which have no degree of freedom	d) None of the above
Correct answer: b) Systems which have finite number of degree of freedom	
Q 10. **Which among the following is the fundamental equation of S.H.M.?**	
a) $x + (k / m) x = 0$	b) $x + \omega^2 x = 0$
c) $x + (k/ m)^2 x = 0$	d) $x^2 + \omega x^2 = 0$
Correct answer: b) $x + \omega^2 x = 0$	
Q 11. **Determine logarithmic decrement, if the amplitude of a vibrating body reduces to 1/6th in two cycles.**	
a) 0.223	b) 0.8958
c) 0.3890	d) None of the above
Correct answer: b) 0.8958	
Q 12. **Calculate coefficient of viscous damper, if the system is critically damped. Consider the following data: 1. Mass of spring mass damper system = 350 kg 2. Static deflection = 2 x 10^{-3} m, 3. Natural frequency of the system = 60 rad/sec**	
a) 100.5 x 10^3 N-s/m	b) 80 x 10^3 N-s/m
c) 42 x 10^3 N-s/m	d) None of the above
Correct answer: c) 42 x 10^3 N-s/m	
Q 13. **Calculate logarithmic decrement if damping factor is 0.33.**	
a) 1.36	b) 3.23
c) 5.16	d) 2.19
Correct answer: d) 2.19	

QUESTION BANK

Subject: Mechanical Vibrations

Q 14. **Calculate natural frequency of damped vibration, if damping factor is 0.52 and natural frequency of the system is 30 rad/sec which consists of machine supported on springs and dashpots.**	
a) 25.62 rad/sec	b) 20.78 rad/sec
c) 14.4 rad/sec	d) 15.33 rad/sec
Correct answer: a) 25.62 rad/sec	
Q 15. **In damped free vibrations, which parameters indicate vibrations?**	
a) Natural frequency	b) Rate of decay of amplitude
c) Both a. and b	d) None of the above
Correct answer: c) Both a. and b	
Q 16. **According to D' Alembert's principle, m (d^2x/dt^2) + c (dx/dt) + Kx =0 is the differential equation for damped free vibrations having single degree of freedom. What will be the solution to this differential equation if the system is critically damped?**	
a) $x = (A + Bt)\, e^{-\omega t}$	b) $x = X\, e^{-\xi\omega t} (\sin \omega_d t + \Phi)$
c) $x = (A - Bt)\, e^{-\omega t}$	d) $x = X\, e^{-\xi\omega t} (\cos \omega_d t + \Phi)$
Correct answer: a) $x = (A + Bt)\, e^{-\omega t}$	
Q 17. **Which of the following statements is/are true for coulomb damping?** **A. Coulomb damping occurs due to friction between two lubricated surfaces** **B. Damping force is opposite to the direction of motion of vibrating body** **C. For smooth surfaces, coefficient of friction depends upon velocity** **D. Damping force depends upon the rubbing velocity between two rubbing surfaces**	
a) Only statement **A**	b) Statement **B, C** and statement **D**
c) Only statement **B**	d) All the above statements are true
Correct answer: c) Only statement **B**	
Q 18. **What is meant by critical damping coefficient?**	
a) Frequency of damped free vibrations is less than zero	b) The motion is aperiodic in nature
c) Both a. and b.	d) None of the above
Correct answer: b) The motion is aperiodic in nature	
Q 19. **Which of the following relations is true for viscous damping?**	
a) Force α relative displacement	b) Force α relative velocity
c) Force α (1 / relative velocity)	d) None of the above
Correct answer: b) Force α relative velocity	
Q 20. **Eddy current damping is an example of** _____	

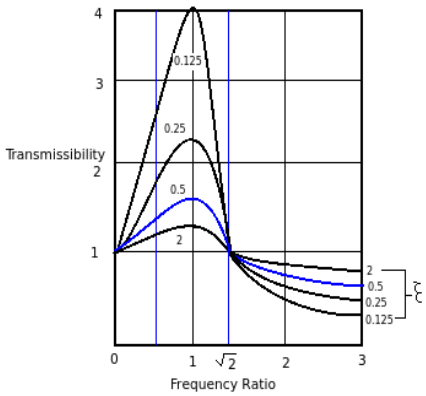
QUESTION BANK

Subject: Mechanical Vibrations

a) Coulomb damping	b) Hysteresis damping
c) Viscous damping	d) Dry friction damping
Correct answer: c) Viscous damping	
Q 21. **Which of the following statements is/are true for elastomers?**	
a) Elastomers can be used for static deflections up to 12 mm	b) Elastomers can provide natural frequencies below 5 Hz
c) Elastomers have good performance at high frequencies	d) All the above statements are true
Correct answer: d) All the above statements are true	
Q 22. **Which of the following statements is/are false for pneumatic isolators?** **1. Pneumatic isolators are used when driving frequencies below 10 Hz are present** **2. Nausea is caused due to noise at low frequencies** **3. At high natural frequencies, isolators can obtain efficiency of 90%** **4. Pneumatic isolators have limited load carrying capacity**	
a) Only statement 1	b) Only statement 3
c) Only statement 2, 4	d) All the above statements are false
Correct answer: b) Only statement 3	
Q 23. **A vibrating machine of 100 kg is mounted on a rubber pad which has stiffness of 500 N/m. Determine force transmitted to the foundation if the unbalanced force 500 N acts on it. The frequency ratio (ω/ω_n) is 1.5 and ξ = 0.5.**	
a) 461.62 N	b) 400.23 N
c) 450 N	d) Insufficient data
Correct answer: a) 461.62 N	
Q 24. **Transmissibility is the ratio of** _____	
a) force transmitted to the supporting structure and force impressed upon the system	b) displacement amplitude of mass and displacement amplitude of supporting structure
c) both a. and b	d) none of the above
Correct answer: c) both a. and b	
Q 25. **What is the function of the controller in active vibration isolation systems?**	
a) Detect vibrations to be controlled	b) Reposition the masses
c) Interpret detected vibrations and execute commands	d) All of the above
Correct answer: c) Interpret detected vibrations and execute commands	
Q 26. **Which among the following is not considered when reference standards are used in the field of mechanical vibration and shock, monitoring and analysis of machines?**	

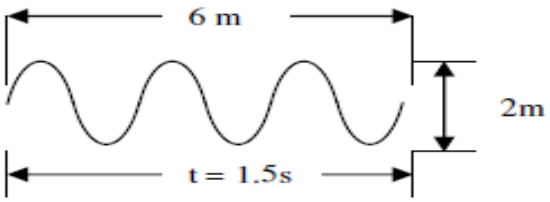
QUESTION BANK

Subject: Mechanical Vibrations

a) Terminology	b) Methods of testing
c) Methods of measurement	d) None of the above
Correct answer: d) None of the above	
Q 27. **Which basic document describes general requirements for measurement and evaluation of machine vibrations using shaft measurements?**	
a) ISO – 10816-1	b) ISO – 7919-1
c) Both a. and b	d) None of the above
Correct answer: b) ISO – 7919-1	
Q 28. **In the graph shown below, the region in which frequency ratio (ω/ω_n) > $\sqrt{2}$ is known as____** 	
a) Amplification region	b) Isolation region
c) Spring controlled region	d) None of the above
Correct answer: b) Isolation region	
Q 29. **Which of the following is a type of untuned vibration absorber?**	
a) Houdaille damper	b) Torsional vibration absorber
c) Centrifugal pendulum absorber	d) All of the above
Correct answer: a) Houdaille damper	
Q 30. **Which of the following methods can be used to reduce excitation level at the source?**	
a) Lubrication of joints	b) Balancing inertia forces
c) Both a. and b	d) None of the above
Correct answer: c) Both a. and b	

QUESTION BANK

Subject: Mechanical Vibrations



Q31 -33 related to above diagram

Q31. The wavelength of the wave is:

a) 0.5 m	b) 1.0 m
c) 2.0 m	d) 4.0 m
Correct answer: c) 2.0 m	
Q 32. **The amplitude of the wave is:**	
a) 0.5 m	b) 1.0 m
c) 2.0 m	d) 4.0 m
Correct answer: b) 1.0 m	
Q 33. **The frequency of the wave is:**	
a) 2 Hz	b) 3 Hz
c) 1.5 Hz	d) 0.5 Hz
Correct answer: a) 2 Hz	
Q 34. **A girl on the beach watching water waves sees 4 waves pass by in 2 seconds, each with a wavelength of 0.5 m. The speed of the waves is:**	
a) 0.25 m/s	b) 0.5 m/s
c) 1.0 m/s	d) 2.0 m/s
Correct answer: c) 1.0 m/s	
Q 35. **As a wave passes from a spring to another spring with a greater tension:**	
(a) Speed of the wave decreases	(b) Frequency of the wave increases.
(c) Frequency of the wave decreases.	(d) Amplitude of the wave increases.
Correct answer: c) Frequency of the wave decreases	
Q 36. **A wave source of constant frequency sends a wave through a tight string of uniform density with a speed v_0 and wavelength λ_0 The tension is then relaxed to half its initial tension. Speed of the wave is now:**	
a) v_0	b) $2\ v_0$
c) $4\ v_0$	d) $\sqrt{2}\ v_0$
Correct answer: c) $4\ v_0$	

QUESTION BANK

Subject: Mechanical Vibrations

Q 37. **The Doppler effect produces apparent changes in:**	
a) Loudness	b) Frequency
c) Amplitude	d) Velocity
Correct answer: b) Frequency	
Q 38. **Vibration of an object about an equilibrium point is called simple harmonic motion when the restoring force is proportional to**	
a) Time	b) Displacement
c) Spring Constant	d) Mass
Correct answer: b) Displacement	
Q 39. **For a mass hanging from a spring, the maximum displacement the spring is stretched or compressed from its equilibrium position is the system's:**	
a) Amplitude	b) Time Period
c) Frequency	d) Acceleration.
Correct answer: a) Amplitude	
Q 40. **A piano wire has a tension of 650 N and a mass per unit length of 0.060 g/cm. What is the speed of waves on this wire?**	
a) 1.0×10^2 m/s	b) 3.3×10^2 m/s
c) 1.0×10^2 m/s	d) 33 m/s
Correct answer: b) 3.3×10^2 m/s	
Q 41. **In a sinusoidal traveling wave, the distance between two points that differ in phase by 2π radians is the:**	
a) Frequency	b) Period
c) Amplitude	d) Phase constant
Correct answer: c) Amplitude	
Q 42. **Sound is a good example of:**	
a) Transverse waves	b) Longitudinal waves
c) Both transverse and Longitudinal waves	d) None of the above
Correct answer: b) Longitudinal waves	
Q 43. **A pendulum bob is a good example of:**	
a) Vibration	b) Oscillation
c) Ventilation	d) Periodic Motion
Correct answer: d) Periodic Motion	
Q 44. **Direction of waves is parallel to distance of vibration in:**	

QUESTION BANK

Subject: Mechanical Vibrations

a) Transverse waves	b) Longitudinal waves
c) Both transverse and Longitudinal waves	d) None of the above
Correct answer: b) Longitudinal waves	
Q 45**. A wave source of constant frequency sends a wave through a tight string of uniform density with a speed and wavelength The tension is then relaxed to half its initial tension. The wavelength of the wave is now:**	
a) λ_0	b) $2\ \lambda_0$
c) $4\ \lambda_0$	d) $\sqrt{2}\ \lambda_0$
Correct answer: c) $4\ \lambda_0$	
Q 46. **Velocity at equilibrium position is**	
a) constant	b) minimum
c) maximum	d) zero
Correct answer: c) maximum	
Q 47. **If swing moves from right to left then velocity is**	
a) negative	b) positive
c) constant	d) zero
Correct answer: a) negative	
Q 48. **Acceleration is directly related to**	
a) displacement	b) negative of displacement
c) velocity	d) negative of speed
Correct answer: b) negative of displacement	
Q 49. **Gradient of velocity-time graph gives**	
a) force	b) frequency
c) wavelength	d) acceleration
Correct answer: d) acceleration	
Q 50. **Magnitude of gradient of a-x graph is**	
a) ω	b) ω^2
c) ω/2	d) ω^3
Correct answer: b) ω^2	
Q 51. **Potential energy of system is maximum at**	
a) extreme position	b) mean position
c) in between extreme and mean position	d) moderate position
Correct answer: a) extreme position	

QUESTION BANK

Subject: Mechanical Vibrations

Q 52. **In S.H.M acceleration is always directed towards the**	
a) equilibrium position	b) mean position
c) tangent to motion	d) downwards
Correct answer: b) mean position	
Q 53. **Number of oscillations per unit time is**	
a) amplitude	b) wavelength
c) frequency	d) period
Correct answer: c) frequency	
Q 54. **When displacement x = 0 then kinetic energy of system is**	
a) minimum	b) maximum
c) constant	d) zero
Correct answer: d) zero	
Q 55**. Energy of a system executing S.H.M is**	
a) increasing	b) decreasing
c) constant	d) variable
Correct answer: c) constant	
Q 56. **Oscillatory motion has a**	
a) straight lined graph	b) randomly lined graph
c) sinusoidal graph	d) asymptotic graph
Correct answer: c) sinusoidal graph	
Q 57. If an object moves back and forth repeatedly around a mean position it is called	
a) oscillating	b) revolving
c) rotating	d) under linear motion
Correct answer: a) oscillating	
Q 58. **Our eyes detect oscillations up to**	
a) 8 Hz	b) 9 Hz
c) 6 Hz	d) 5 Hz
Correct answer: d) 5 Hz	
Q 59. **The force that acts to return mass to its equilibrium position is called**	
a) frictional force	b) restoring force
c) normal force	d) contact force
Correct answer: b) restoring force	

QUESTION BANK

Subject: Mechanical Vibrations

Q 60**. In cars springs are damped by**	
a) shock absorbers	b) engine
c) brake pedals	d) tyres
Correct answer: a) shock absorbers	

QUESTION BANK

Subject: NTM

Q 1. What is the reason for using unconventional or advanced machining processes?	
a. Complex surfaces	b. High accuracy and surface finish
c. High strength alloys	d. All of the above
Correct answer: d	
Q.2) Which of the following is not a media of energy transfer on which the advanced machining processes are classified?	
a. Reactive atmosphere	b. Electrons
c. Electrolyte	d. Chemical ablation
Correct answer:d	
Q.3) The spark gap in Electrical Discharge Machining (EDM) process is maintained such that	
a)the gap voltage is around 99% of supply voltage	b. the gap voltage is around 70% of supply voltage
c. the gap voltage is around 50% of supply voltage	d. the gap voltage is around 10% of supply voltage
Correct: answer b	
Q.4) Which of the following materials is/are used for Electrical Discharge Machining (EDM) process?	
a. Brass	b. Copper
c. Graphite	d. All of the above
Correct answer:d	
5) In Electrical Discharge Machining (EDM) process the metal removal is carried out by	
a. electrolysis	b. melting and vaporisation
c. fracture of work material due to impact of grains	d. none of the above
Correct answer:b	
Q.6) Which of the following statements are true for Electro-Chemical Machining (ECM)? 1. ECM is capable of machining metals and alloys irrespective of their strength and hardness 2. No cutting forces are involved in ECM process 3. ECM process consumes very high power 4. Very small space is required to set up ECM process	
a. (1), (2) and (3)	b. (2), (3) and (4)

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c. (1), (3) and (4)	d. (1), (2) and (4)
Correct answer:A	
Q.7) In which process the material is removed due to the action of abrasive grains?	
a. Electro-Chemical Grinding (ECG)	b. Ultrasonic Machining (USM)
c. Laser Beam Machining (LBM)	d. Electrical Discharge Machining (EDM)
Correct answer:b	
Q.8) Which of the following processes is generally applied for dentistry work like to drill fine holes of particular shape in teeth?	
a. Electrical Discharge Machining (EDM)	b. Electron Beam Machining (EBM)
c. Laser Beam Machining (LBM)	d. Ultrasonic Machining (USM)
Correct answer:d	
Q.9) The Laser Beam Machining process can be carried out, when the media for energy transfer between tool and workpiece is	
a. air	b. liquid
c. vacuum	d. any of the above medium
Correct answer:d	
Q.10) Which of the following process has highest rate of metal removal?	
a. Electric Discharge Machining (EDM)	b. Electro-Chemical Machining (ECM)
.c. Ultrasonic Machining (USM)	d. Laser Beam Machining (LBM)
Correct answer:b	
Q14. USM can be classified as the following type of non-traditional machining process	
a) electrical	b) optical
.c. mechanical	d chemical
Correct answer:c	
Q15. WJM cannot be used to machine	
(a) frozen food	(b) plywood
(c) leather	(d) steel plates
Correct answer:d	
Q16). In AWJM mixing process takes place in	

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(a) intensifier	b) catcher
(c) mixing chamber	d) orifice
Correct answer:c	
Q17)Abrasive water jet velocity increases with (keeping all other parameters unchanged	
(a) increasing traverse velocity of the job	b) decreasing mass flow rate of abrasive
(c) decreasing traverse velocity of the job	d) increasing mass flow rate of abrasive
Correct answer:b	
Q18). In an environment friendly development concerning AWJM, the following is used as abrasive	
(a) dry ice	(b) cubic boron nitrite
c) diamond	(d) tungsten carbide
Correct answer:a	
Q 19. Which of the following process is used for preparing parts having large curved surfaces and thin sections?	
a) Hot machining	b) Ultrasonic machining
c) ECM process	d) Chemical milling
Correct answer: d	
Q 20. The tool life is affected by	
a) Depth of cut	b) Cutting speed
c) Feed	d)) All of these
Correct answer:d	
Q 21)**Which the following is true for Electrical Discharge machining (EDM)?** i. The metal removal takes place due to erosion ii. Any electrical conductor can be machined by this method. iii. Some light oil like transformer oil or kerosene oil is used as dielectric. a. Only i b. i &ii c. i,ii & iii d. ii & iii	
a) Only i	b) i &ii

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c) i,ii & ii	d) ii & iii
Correct answer:c	
Q22).In Electrical discharge machining (EDM), the spark gap is kept between ___mm to___mm.	
a)5 to 5	b)05, 0.5
c)005, 0.05	d)0005, 0.005
Correct answer:c	
Q.23)In Electrical discharge machining, the temperature developed is of the order of	
a. 2,000°C	b. 6,000°C
c. 10,000°C	d. 14,000°C
Correct answer:c	
Q.24) Which of the following is not true in case of Electrical discharge machining (EDM)?	
a. Erosion takes place both on Work piece and the tool.	b. Gap between tool and work piece is controlled by servo mechanism.
c. The electrode (tool) is made of graphite or copper.	d. The size of impression on work piece is exactly the same as that on electrode (tool).
Correct answer:d	
Q.25) The Electrical Discharge machining (EDM) process is a.	
a. Burr free	b. Not for hard metals
c. Direct contact machining	d. Capable of producing sharp corners
Correct answer:a	
Q 26 **The cathode filament is heated to a temperature of _____ in case of Electron beam machining**	
a) 1200°C	b) 1700°C
c) 2000°C	d) 2500°C
Correct answer:d	
Q 27 **The vacuum in case of Electron Beam machining is of the order of**	
a) 10^{-2} mm of mercury	b) 10^{-5} mm of mercury
c) 10^{-7} mm of mercury	d) 10^{-9} mm of mercury
Correct answer:b	

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Q 28 In Electron beam machining, as the electrons strikes the work piece	
a) Their kinetic energy is converted into heat	b) They get scattered
c) Mechanical erosion in work piece takes place	d) Electro-chemical etching takes place
Correct answer:a	
Q 29. In Electron beam machining, workpiece is held in	
a) vacuum chamber	b) dielectric medium
c) electrolyte	d) none of these
Correct answer:a	
Q 29. In Electron beam machining, workpiece is held in	
a) vacuum chamber	b) dielectric medium
c) electrolyte	d) none of these
Correct answer:a	
Q.31) Plasma is a mixture of i. free electrons ii. positively charged ions iii. neutral atoms	
a. i & ii	b. ii & iii
c. i & iii	d. i, ii & iii
Correct answer:d	
Q.32) The metal is removed in Plasma arc machining due to	
a. erosion	b. chemical reaction
c. melting of metal	d. grinding
Correct answer:b	
Q.33) **In Plasma arc welding the electrode is made of**	
a. tungsten	b. copper
c. bass	d. steel
Correct answer:a	
Q.34) **In plasma arc welding, the maximum temperature is of the order of**	

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a18000°C	B 20000°C
C 28000°C	D 35000°C
Correct answer: c	
Q.35) **Which of the following method is used for profile cutting of flat plates?**	
a. Electron beam machining	b. Laser beam machining
c. Plasma arc machining	d. Electro-chemical machining
Correct answer:c	
Q36) **The process utilizing mainly thermal energy for removing material is**	
a. Ultrasonic Machining	b. Electrochemical Machining
c. Abrasive Jet Machining	d. Laser Beam Machining
Correct answer:d	
Q37) Which of the following is used as gas laser in Laser beam machining? **i. Helium-neon** **ii. Agron** **iii. CO_2**	
a. i only	b. i & ii
c. ii & iii	d. All of these
Correct answer:d	
Q38) **Which of the following methods is used for trimming of sheet metal and plastic parts?**	
a. Ultrasonic Machining	b. Electrochemical Machining
c. Abrasive Jet Machining	d. Laser Beam Machining
Correct answer:d	
Q39) In which of the following methods, an electrolyte is used?	
a. Ultrasonic Machining	b. Electrochemical Machining
c. Abrasive Jet Machining	d. Laser Beam Machining

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Correct answer:b	
Q40) Which of the following is not true for Laser beam machining?	
a. The laser used can be of solid or gaseous type	b. It is a thermal cutting type process
c. The light radiated from flash lamp is directly focused on workpiece	d. Any material can be machined irrespective of its physical and mechanical properties.
Correct answer:c	
Q41) In electrochemical machining (ECM) removal of metal from the work piece takes place	
a. anodic dissolution	b. abrasive action
c. thermal melting	d. erosion
Correct answer:a	
Q42) Which of the following process is based on Faradays law of Electrolysis?	
a. Electron beam Machining	b. Laser Beam Machining
c. Electrical discharge Machining	d. Electrochemical Machining
Correct answer:d	
Q43) In Electrochemical machining the gap maintained between tool and workpiece is of the order of	
a. 0.05mm	b. 0.1mm
c. 0.5mm	d. 1mm
Correct answer:c	

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Q50) In Ultrasonic machining, the function of transducer is to

a. both tool and workpiece are stationary
b. both tool and workpiece move
a. convert mechanical energy into heat
B convert electrical energy into heat
c. tool is stationary and workpiece moves
d. tool moves and workpiece is stationary
C convert electrical energy into mechanical vibrations
D convert mechanical energy into electrical energy

Q45) Machining of complicated shapes like jet engine blades and turbine blades is done by

Correct answer:c

Q51) In Ultrasonic machining, the tool moves

c. Laser Beam Machining
d. Electrochemical Machining
a. moves in transverse direction
B moves in longitudinal direction

Correct answer:d

Q46) In which of the following, an electrochemical oxidation on the work surface takes place

a. Electrochemical grinding
b. Electrical discharge Machining
c. Electrochemical Machining
d. Ultrasonic Machining

Correct answer:a

Q47)Tools and carbide tips are sharpened by

a. Electrical discharge Machining
b. Electrochemical grinding
c. Electrochemical Machining
d. Ultrasonic Machining

Correct answer:c

Q48) The vibrating frequency used for the tool in Ultrasonic machining is of the order of

a. 10,000 oscillations per second
b. 20,000 oscillations per second
c. 35,000 oscillations per second
d. 45,000 oscillations per second

Correct answer:b

Q49)In Ultrasonic machining, the material is removed by

a. anodic dissolution
b. thermal melting
c. abrasive action
d. electrochemical oxidation

Correct answer:c

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C vibrates in transverse direction	D vibrates in longitudinal direction
Correct answer:d	
Q52) In which of the following processes, the shape of tool is not same as that of cavity produced?	
a. Ultrasonic Machinig	b. Electrical discharge Machining
c. Electrochemical Machining	d. Plasma arc machining
Correct answer:d	
Q53) In which of the following processes, a nozzle is used? i. Plasma arc machining ii. Ultrasonic Machining iii. iii. Abrasive jet machining	
a. i & ii	b. ii & iii
c. i & iii	d. i, ii & iii
Correct answer:c	
Q54) In which of the following gases is not used in Abrasive jet machining?	
a. Air	b. Nitrogen
c. Carbon di-oxide	d. Argon
Correct answer:d	
Q55) Laser is produced by	
a) graphite	b) ruby
b. diamond	d) emerald
Correct answer:b	
Q56) A connecting rod is made by	
a) casting	b) drawing
c) forging	(d) extrusion
Correct answer:c	
Q57) Preheating before welding is done to	
(a) make the steel softer	b) burn away oil, grease, etc, from the plate surface

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c) prevent plate distortion	(d) prevent cold cracks
Correct answer :d	
Q58) **In Electro- Discharge Machining (EDM), the tool is made of**	
(a) Copper	(b) High speed steel
(c) Cast iron	(d) Plain carbon steel
Correct answer:a	
Q59) In electro chemical machining (ECM) the material removal is due to	
a) corrosion	b) erosion
c) fusion	d) ion displacement
Correct answer:d	
Q60) **Tool life of the cutting tool is most affected by**	
(a) Cutting speed	b) Tool geometry
c) Cutting feed and depth	(d) Microstructure of material being cut
Correct answer:a	

QUESTION BANK

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Q 1. The formation of frost on cooling coils in a refrigerator	
a) Increase heat transfer	b) Improves COP of the system
c) Increase power consumption	d) Reduce power consumption
Correct answer: C	
Q.2. In a saturated air-water vapour mixture, the	
a) Dry bulb temperature is higher than wet bulb temperature	b) Dew point temperature is lower than wet bulb temperature
c) Dry bulb, wet bulb and dew point temperature are same	d) Dry bulb temperature is higher than dew point temperature
Correct answer: C	
Q 3. Centrifugal compressors are used in:	
a) Large refrigerant capacity systems	b) In small refrigerant capacity systems
c) Domestic refrigeration and air conditioning	d) All of the above
Correct answer: A	
Q 4. Which of the following refrigerants replace R12 in domestic refrigerators?	
a) R22	b) R11
c) R134a	d) R141b
Correct answer: C	
Q 5. Hermetic compressors are used mainly in smaller systems as they:	
a) Yield higher COP	b) Do not require frequent servicing
c) Offer the flexibility of using any refrigerant	d) Can be used under different load conditions efficiently
Correct answer: B	
Q 6. A reversed Carnot cycle has COP of 4. The ratio of higher temperature to lower temperature will be	
a) 1.5	b) 2
c) 1.25	d) 2.5
Correct answer: C	
Q 7. Which of the following is not positive displacement type compressor?	
a) Rotary vane compressor	b) Rotary screw type compressor
c) Centrifugal compressor	d)Reciprocating compressor
Correct answer: C	
Q 8. For ammonia refrigerating systems, the tubes of a shell and tube condenser are made of	
a) Copper	b) Aluminium
c) Steel	d) Brass
Correct answer: C	
Q 9. The work requirement for a reciprocating compressor is minimum when the compression process is	

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a) Isothermal	b) Isentropic
c) Polytropic	d) Adiabatic
Correct answer: A	
Q 10. Which of the following forces does not act in case of fluids	
a) Centrifugal Forces	b) Tensile Forces
c) Vibratory forces	d) Elastic Forces
Correct answer: B	
Q 11. Which of the following statements are TRUE?	
a) A capillary tube is a variable opening area type expansion device	a) In a capillary tube pressure drop takes place due to fluid friction
c) In a capillary tube pressure drop takes place due to fluid acceleration	d) In a capillary tube pressure drop takes place due to fluid friction and acceleration
Correct answer: D	
Q 12. The wet bulb depression is zero, when relative humidity is equal to	
a) zero	b) 0.5
c) o.75	d) 1.0
Correct answer: D	
Q 13. Which of the following can be called as a refrigeration process?	
a) Cooling of hot ingot from 1000^{o}C to room temperature	b) Cooling of a pot of water by mixing it with a large block of ice
c) Cooling of human beings using a ceiling fan	d)Cooling of a hot cup of coffee by leaving it on a table
Correct answer: B	
Q 14. Evaporative cooling systems are ideal for:	
a) Hot and dry conditions	a) Hot and humid conditions
c) Cold and humid conditions	d) Moderately hot but humid conditions
Correct answer: A	
Q 15. When you add sufficient amount of glucose to a glass of water,	
a) the temp. of water decreases	b) the temp. of water increases
c) the temp. of water remain constant	a) the temp. of water initially increase to a very high value than decreases
Correct answer: A	
Q 16. In a domestic icebox type refrigerator, the ice block is kept at the top because:	
a) It is convenient to the user	b) Disposal of water is easier
c) Cold air can flow down due to buoyancy effect	d) None of the above
Correct answer: C	
Q 17. Freon group of refrigerants are	

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a) Inflammable	b) Toxic
c) Non-inflammable and toxic	d) Nontoxic and non-inflammable
Correct answer: D	
Q 18. The boiling point of ammonia is	
a) -10.5°C	b) -30°C
c) -33.3°C	d) -77.7°C
Correct answer: C	
Q 19. A reversible engine has ideal thermal efficiency of 30%. When it is used as a refrigerating machine with all other conditions unchanged, the coefficient of performance will be	
a) 1.33	b) 2.33
c) 3.33	d) 4.33
Correct answer: B	
Q 20. In a refrigeration system, the expansion device is connected between the	
a)Compressor and condenser	b) Condenser and receiver
c) Receiver and evaporator	d) Evaporator and compressor
Correct answer: C	
Q 21. Rating of a domestic refrigerator is of the order of	
a) 0.1 ton	b) 5 tons
c) 10 tons	d) 40 tons
Correct answer: A	
Q 22. The bank of tubes at the back of domestic refrigerator is	
a) Condenser tubes	b) Evaporator tubes
c) Refrigerant cooling tubes	d) Capillary tubes
Correct answer: A	
Q 23. In a lithium bromide absorption refrigeration system	
a) Lithium bromide is used as a refrigerant and water as an absorbent	b) Water is used as a refrigerant and lithium bromide as an absorbent
c) Ammonia is used as a refrigerant and lithium bromide as an absorbent	d) None of the above
Correct answer: B	
Q 24. The condition of refrigerant after passing through the condenser in a vapour compression system is	
a) Saturated liquid	b) Wet vapour
c) Dry saturated vapour	d) Superheated vapour
Correct answer: A	
Q 25. The COP of a vapour compression plant in comparison to vapour absorption plant is	
a) More	b) Less
c) Same	d) More/Less depending on size of plant

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Correct answer: A	
Q 26. The fluids used in Electrolux refrigerator are	
a) Water and hydrogen	b) Ammonia and hydrogen
c) Ammonia, water and hydrogen	d) None of these
Correct answer: C	
Q 27. Domestic refrigerator working on vapour compression cycle uses the following type of expansion device	
a) Electrically operated throttling valve	b) Manually operated valve
c) Thermostatic valve	d) Capillary tube
Correct answer: D	
Q 28. During dehumidification process, the relative humidity	
a) Remains constant	b) Increases
c) Decreases	d) None of these
Correct answer: C	
Q 29. During sensible cooling of air _____ decreases.	
a) Wet bulb temperature	b) Relative humidity
c) Dry bulb temperature	d) Specific humidity
Correct answer: C	
Q 30. At lower temperatures and pressures, the latent heat of vaporisation of a refrigerant	
a) decreases	b) Increases
c) Remain same	d) Depends on other factors
Correct answer: B	
Q 31. The wet bulb depression is zero when relative humidity is	
a) zero	b) 0.5
c) 0.75	d) 1.0
Correct answer: D	
Q 32. The C.O.P of a refrigeration cycle with increase in evaporator temperature, keeping condenser temperature constant, will	
a) Increase	b) Decrease
c) Remain unaffected	d) May increase or decrease depending on the type of refrigerant used
Correct answer: A	
Q 33. During humidification process, dry bulb temperature	
a) Remains constant	b) Increases
c) Decreases	d) None of these
Correct answer: A	
Q 34. The heat required to melt 1 tonne of ice in 12 hours is equivalent to	
a) one tonne of refrigeration	b) two tonne of refrigeration
c) three tonne of refrigeration	d) half tonne of refrigeration

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Correct answer: B	
Q 35. One tonne of refrigeration is approximately equal to	
a) 3.5 kJ / min	b) 3.5 W
c) 211 kW	d) 211 kJ/min
Correct answer: D	
Q 36. If a heat pump cycle operates between the condenser temperature of +27°C and evaporator temperature of -23°C, then the Carnot COP will be	
a) 0.166	b) 2
c) 5	d) 6
Correct answer: D	
Q 37. During cooling and dehumidification, dry bulb temperature	
a) Remains constant	b) Increases
c) Decreases	d) None of these
Correct answer: C	
Q 38. The conditioned air supplied to the room must have the capacity to take up	
a) Room sensible heat load only	b) Room latent heat load only
c) Both room sensible heat and latent heat loads	d) None of the above
Correct answer: C	
Q 39. The specific humidity during heating and humidification process.	
a) Remains constant	b) Increases
c) Decreases	d) None of these
Correct answer: B	
Q 40. Which of the following statement is correct?	
a) The constant enthalpy lines are also constant wet bulb temperature lines	b) The wet bulb and dry bulb are equal in saturation con
c) The wet bulb temperature is a measure of enthalpy of moist air	d) All of the above
Correct answer: D	
Q 41. Vapour compression refrigeration is somewhat like	
a) Carnot cycle	b) Rankine cycle
c) Reversed Carnot cycle	d) None of the above
Correct answer: D	
Q 42. A heat pump working on a reversed Carnot cycle has a C.O.P. of 5. It works as a refrigerator taking 1 kW of work input. The refrigerating effect will be	
a) 1 kW	b) 2 kW
c) 3 kW	d) 4 kW
Correct answer: D	
Q 43. Refrigeration in aeroplanes usually employs the following refrigerant	

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a) CO_2	b) Freon-11
c) Freon-22	d) Air
Correct answer: D	
Q 44. The condition of refrigerant as it leaves the compressor in a vapour compression system is	
a) Saturated liquid	b) Wet vapour
c) Dry saturated vapour	d) Superheated vapour
Correct answer: D	
Q 45. In order to cool and dehumidify a stream of moist air, it must be passed over the coil at a temperature	
a) Which lies between the dry bulb and wet bulb temperatures of the incoming stream	b) Which lies between the wet bulb and dew point temperatures of the incoming stream
c) Which is lower than the dew point temperature of the incoming stream	d) of adiabatic saturation of incoming stream
Correct answer: C	
Q 46. For ammonia refrigerating systems, the tubes of a shell and tube condenser are made of	
a) Copper	b) Aluminium
c) Steel	d) Brass
Correct answer: C	
Q 47. The refrigerant for a refrigerator should have	
a) High sensible heat	b) High total heat
c) High latent heat	d) Low latent heat
Correct answer: C	
Q 48. The bypass factor for a cooling coil	
a) Increases with increase in velocity of air passing through it	b) Decreases with increase in velocity of air passing through it
c) Remains unchanged with increase in velocity of air passing through it	d) May increase or decrease with increase in velocity of air passing through it depending upon the condition of air entering
Correct answer: A	
Q 49. The dry bulb temperature lines, on the psychrometric chart are	
a) Vertical and uniformly spaced	b) Horizontal and uniformly spaced
c) Horizontal and non-uniformly spaced	d) Curved lines
Correct answer: A	
Q 50. In a vapour absorption refrigeration system, the compressor of the vapour compression system is replaced by	
a) Liquid pump	b) Generator

c) Absorber and generator	d) Absorber, generator and liquid pump
Correct answer:D	
Q 51. Most of the domestic refrigerators work on the following refrigeration system	
a) Vapour compression	b) Vapour absorption
c) Carnot cycle	d) Electrolux refrigerator
Correct answer: A	
Q 52. The dehumidification process, on the psychrometric chart, is shown by	
a) Horizontal line	b) Vertical line
c) Inclined line	d) Curved line
Correct answer: B	
Q 53. The leakage in a refrigeration system using ammonia is detected by	
a) Halide torch	b) Sulphur sticks
c) Soap and water	d) All of these
Correct answer: B	
Q 54. The lowest temperature during the cycle in a vapour compression system occurs after	
a) Compression	b) Expansion
c) Condensation	d) Evaporation
Correct answer: B	
Q 55. In a reversed Brayton cycle, the heat is absorbed by the air during	
a) Isentropic compression process	b) Constant pressure cooling process
c) Isentropic expansion process	d) Constant pressure expansion process
Correct answer: D	
Q 56. The central air conditioning system has _____ overall efficiency as compared to individual systems.	
a) Same	b) Lower
c) Higher	d) None of these
Correct answer: C	
Q 57. During a refrigeration cycle, heat is rejected by the refrigerant in a	
a) Compressor	b) Condenser
c) Evaporator	d) Expansion Valve
Correct answer: B	
Q 58. In a vapour compression refrigeration system, a throttle valve is used in place of an expander because	
a) It considerably reduces mass of the system	b) It improves the C.O.P., as the condenser is small
c) The positive work in isentropic expansion of liquid is very small	d) It leads to significant cost reduction
Correct answer: C	
Q 59. A good refrigerant should have	

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a) High latent heat of vaporisation and low freezing point	b) High operating pressures and low freezing point
c) High specific volume and high latent heat of vaporisation	d) Low C.O.P. and low freezing point
Correct answer: A	
Q 60. The capillary tube is not used in large capacity refrigeration systems because	
a) Cost is too high	b) Capacity control is not possible
c) It is made of copper	d) Required pressure drop could not be achieved
Correct answer: B	