

## SYNCHRONOUS MACHINES QUESTION BANK

**Ques 1.** Synchronous motor for power factor correction operates at

1. No load with over-excited fields
2. No load with under-excited fields
3. Normal load with minimum excitation
4. Normal load with zero excitation

**Ques 2.** What happens if field winding of the synchronous motor is short circuited?

1. First, starts as induction motor then run as synchronous motor
2. Not start
3. Motor will burn out
4. Run as induction motor

**Ques 3.** When the field winding of an unloaded salient pole synchronous motor is open circuited the motor will

1. Burn
2. Not start
3. Run as induction Motor
4. Run as variable reluctance motor

**Ques 4.** The speed regulation of a synchronous motor is

1. 100%
2. 50%
3. 25%
4. 0%

**Ques 5.** The negative phase sequence in a three phase synchronous motor exists when the motor is

1. Supplied with an unbalanced voltage
2. Supplied with an unbalanced load
3. Unbalanced system fault
4. All of the above

**Ques 6.** In 3- $\Phi$  synchronous motor if one of the phases is short circuited the motor will

1. Run as before
2. Overheated and eventually burn
3. Not start
4. Burn

**Ques 7.** For a synchronous motor, the breakdown torque will be proportional to

1. Applied voltage  $V$
2.  $V^2$
3.  $1/V$
4.  $1/V^2$

**Ques 8.** In a synchronous motor, during hunting when the rotor speed exceeds the synchronous speed then damper bar develop

1. Induction generator torque
2. Harmonic
3. DC motor torque
4. Synchronous motor torque

**Ques 9.** In a synchronous motor, at no load condition, and with normal excitation the armature current drawn by a synchronous motor is

1. Zero

2. Lagging applied voltage by  $90^\circ$
3. Leading Applied voltage by  $90^\circ$
4. In phase with applied voltage

**Ques 10.** In a synchronous motor, “hunting” may be due to variation in any of the following EXCEPT

1. Winding friction
2. Frequency
3. Load
4. Supply voltage

**Ques 11.** For a synchronous motor, the maximum value of torque developed at an angle of

1. 120 degree
2. 45 degree
3. 0 degree
4. 90 degree

**Ques 12.** What happens to the synchronous motor when the excitation of an unloaded salient-pole synchronous motor suddenly gets disconnected?

1. Run as variable reluctance motor
2. Run as induction motor
3. Motor will stop
4. None of the above

**Ques 13.** A synchronous motor working at leading power factor can be used as

1. Synchronous induction motor
2. Static condenser
3. Synchronous condenser
4. None of the above

**Ques 14.** Which of the following motor is not self-starting?

1. Wound rotor induction motor
2. Squirrel cage induction motor
3. DC series motor
4. Synchronous motor

**Ques 15.** Which of the following motor can operate on lagging as well as leading power factor?

1. DC series motor
2. Wound rotor induction motor
3. Squirrel cage induction motor
4. Synchronous motor

**Ques 16.** A synchronous motor is switched on to supply with its field windings short circuited. It will run as

1. DC series motor
2. Induction motor
3. Induction motor then run as synchronous motor
4. None of the above

**Ques 17.** The back emf in the stator of a synchronous motor depends on

1. Flux density
2. DC excitation
3. Load on the motor
4. Speed of the rotor

**Ques 18.** The main reason of embedding the damper winding in the pole face is to

1. Eliminate losses on account of air friction
2. Reduce bearing friction

3. Eliminate hunting and provide starting torque
4. Eliminate air friction

**Ques 19.** A 3 phase, salient pole synchronous motor is fed from an infinite bus and is running at no load. Now if the field current of the motor is reduced to zero then the

1. Motor will run at synchronous speed
2. Motor will stop
3. Motor will run at low speed
4. Motor will burn

**Ques 20.** The maximum value of torque that a synchronous motor, can develop without losing its synchronism, is known as

1. Pull out torque
2. Breaking torque
3. Slip torque
4. Non-synchronizing torque

**Ques 21.** What is the ratio of no load speed to full load speed of a 200 kVA, 12 poles, 2200 V, 3 phase, 60 Hz synchronous motor?

1. Infinite
2. 1
3. 1.1
4. 1.21

**Ques 22.** In case of synchronous motor if the back emf generated in the armature at no load is approximately equal to the applied voltage, then the

1. Torque generated is maximum
2. Motor is fully loaded
3. Excitation is 100%

4. No Excitation at all

**Ques 23.** The armature current of the synchronous motor has large values for

1. High excitation
2. Low excitation
3. Both high and low excitation
4. None of the above

**Ques 24.** The construction of a synchronous motor resembles which of the following machine

1. Differential compound motor
2. Alternator
3. Dc series motor
4. Induction motor

**Ques 25.** The synchronous motors are not self-starting because

1. The direction of torque on the rotor reverses after every half cycle.
2. Slip is not present in synchronous machine
3. Starting winding is not present in synchronous machine
4. DC excitation is used

**Ques 26.** If a synchronous motor fails to pull into synchronism after applying dc field current, the main cause is

1. Low short circuit ratio
2. High field current
3. High core losses
4. Low field current

**Ques 27.** What happens when a synchronous motor is connected to an infinite bus while operating on leading power factor?

1. Excitation voltage will be independent of the supply voltage.
2. Excitation voltage will be more than the supply voltage.
3. Excitation voltage will be less than the supply voltage.
4. Excitation voltage will be equal to the supply voltage.

**Ques 28.** Which of the following losses is not dissipated by the stator core surface in a synchronous motor?

1. Eddy current losses in the conductors
2. Iron losses in the stator
3. Windage losses.
4. Copper losses in the slot portion of the conductors

**Ques 29.** The direction of rotation of synchronous motor can be reversed by reversing

1. Field winding
2. Polarity of the rotor poles
3. Supply phase sequence
4. None of the above

**Ques 30.** In synchronous motor out of the following losses, which one will have the highest proportion?

1. Stator copper losses
2. Iron losses
3. Eddy current losses
4. Friction and windage losses

**Ques 31.** The speed of a synchronous motor

1. Increases as load increases
2. Adjusts itself to new equilibrium speed whenever load changes.
3. Always remains constant

4. Reduces as load increases

**Ques 32.** In a synchronous motor if the saturation is neglected, then the short circuit ratio (SCR) will be related to the synchronous reactance ( $x_d$ ) as

1.  $SCR = 1/ (x_d)$
2.  $SCR = 1/ (x_d)^2$
3.  $SCR = x_d$
4.  $SCR = (x_d)^2$

**Ques 33.** Which of the following devices can be used as a phase advancer?

1. Synchronous motor working at lagging power factor
2. Synchronous motor working at leading power factor
3. Squirrel cage induction motor
4. Slip ring induction motor

**Ques 34.** In a synchronous machine is called as doubly excited machine because

1. It can be over excited
2. It needs twice the normal exciting current
3. It has two sets of rotor poles
4. Both its rotor and stator are excited

**Ques 35.** In case of a 3 phase synchronous motor, percentage of maximum speed variation is

1. 5%
2. Zero
3. 10%
4. 3%

**Ques 36.** If the field of a synchronous motor is under excited, the power factor will be

1. Lagging
2. Leading
3. Zero
4. None of the above

**Ques 37.** Which of the following is an unexcited single phase synchronous motor?

1. Reluctance motor
2. Repulsion motor
3. A.C. series motor
4. Universal motor

**Ques 38.** The damper winding in a synchronous motor is provided for

1. Starting torque only
2. Reduce eddy currents
3. Prevent hunting and provide the starting torque.
4. Reduce the noise level

**Ques 39.** When the field of a synchronous motor is over excited, the power factor will be

1. Leading
2. Lagging
3. Zero
4. Unity

**Ques 40.** A Synchronous motor can operate at

1. Unity power factor
2. Leading power factor
3. Lagging power factor
4. Leading as well as lagging power factor

