

## Question Bank

### **Subject- TE-II (BTCE-804)-IKGPTU**

1. Giving a typical cross section of a permanent way, indicate various components/ What is permanent way? Explain functions of various components briefly?
2. List out the various gauges prevailing in India with their gauge widths.
3. What are the factors governing the selection of suitable gauge?
4. Draw neat labelled cross section of a single line and double line broad gauge track in embankment on straight path.
5. What are the different types of rails? What are the advantages of using F.F. rails?
6. Name at least five causes of Rail failures?
7. What is meant by wear of Rails? Enumerate the various types of Rail wear and enlist the methods by which it can be measured.
8. What are Sleepers? What are the advantages and disadvantages of Concrete sleepers?
9. What is the minimum number of sleepers required for a 2km length of rail for a broad gauge?
10. Write about Adzing of sleepers and sleeper density.
11. Determine the number of sleepers required for the construction of 2000 m of BG track, with a sleeper density of  $N + 7$ .
12. Determine the number of sleepers required for the construction of 1800 m of BG track, with a sleeper density of  $N + 5$ .
13. Find the number of sleepers required for constructing a B.G. railway track 640m long, using a sleeper density of  $M+5$ , where  $M$  is the length of the rail in metres.
14. A Broad gauge track has a sleeper density of  $(n + 6)$ . If the track is laid with welded rails of 26 meter length, find out the number of sleepers on rail length?
15. Explain adzing of sleepers Why it is needed?
16. What is the role of ballast in railway track? What are the requirements of ballast?
17. What is Creep? What are its causes?
18. What is coning of wheel and tilting of rails. Explain the behaviour of a coned wheel on curved track.
19. Explain various types of chairs and their uses?
20. Explain the following terms (i) Track modulus, (ii) Coning of Wheels. Draw neat sketches, wherever necessary.
21. List the types of rail joints.
22. What is cant deficiency? Draw a neat sketch of the same.
23. What do you understand negative super elevation?
24. What are the limitations of cant deficiency?
25. Derive an expression for cant in rail curves.
26. What is degree of curve?
27. Differentiate between Stud switch and Split switch.
28. What is the difference between T.N.C and A.N.C?
29. What are the different gradients used in Railways? Briefly describe.
30. What are objects of signaling?
31. What is the necessity of points and crossings on Railways?
32. What are the functions of a Railway station?
33. Gradients in station yards.

34. What is meant by a crossing? What are the essential requirements of a good crossing? Discuss various types of crossings in use on Indian Railways?
35. Draw a neat diagram of simple right-hand turnout and show its various component parts. Explain the working principle of the turnout.
36. Describe the working of " Absolute Block" system of signaling. How signals are classified? Explain with neat sketches the working of semaphore signals.
37. Draw a neat sketch of Right hand turn out, clearly showing the various elements.

**2marks**

1. What do you understand by zoning laws, approach zone, clear zone and turning zone?
2. What do you understand by airport capacity? What are factors which affect the airport capacity?
3. What do you understand by runway capacity? What are factors which affect the runway capacity?
4. List the items to be considered in the geometric design of a runway.
5. Draw sketches of runway and taxiway fillets for small airports.
6. List various factors controlling taxiway layout. / List various factors on which the location of exit taxiway depends upon.
7. What do you understand by the term basic runway length?
8. What do you understand by the term visual aid in connection with airports?
9. Draw a neat sketch of Wind direction indicator.

**5marks**

10. Name the different characteristics of aircrafts.
11. Draw a neat sketch of an aeroplane and explain its various components parts?
12. Explain how the basic runway length is determined on the basis of the performance characteristics of jet and conventional engine aircrafts.
13. What is a wind rose diagram? What is its utility? What are its types?
14. What are the design considerations for a taxiway lightning? Explain with neat sketches.
15. Design an exit taxiway joining a runway and a parallel main taxiway. The total angle of turn is  $30^\circ$  and the turn off speed is 80 kmph.

**10marks**

16. Enumerate the various factors which would keep in view while selecting a suitable site for an airport?
17. Draw a neat cross section of runway for an international. Airport having instrumental and in facilities. Show therein the various runway geometrics.
18. What are the imaginary surfaces? What is their significance? Explain with the aid of neat sketches the shape of each surface for different types of airport.