



- Notes :
1. All questions carry marks as indicated.
 2. Solve Question 1 OR Questions No. 2.
 3. Solve Question 3 OR Questions No. 4.
 4. Solve Question 5 OR Questions No. 6.
 5. Solve Question 7 OR Questions No. 8.
 6. Solve Question 9 OR Questions No. 10.
 7. Solve Question 11 OR Questions No. 12.
 8. Due credit will be given to neatness and adequate dimensions.
 9. Assume suitable data whenever necessary.
 10. Diagrams and chemical equations should be given whenever necessary.
 11. Illustrate your answers whenever necessary with the help of neat sketches.
 12. Use of non programmable calculator is permitted.

1. a) Using sleeper Density of $N + 7$, find out the number of sleepers required for the constructing a Railway Track 1.2km long. (MG) **6**
- b) Define Gauge of Railway Track. What are the factor which affects the selection of a Gauge? **7**

OR

2. a) What do you understand by "Permanent way" ? Discuss the requirement of ideal permanent way. **6**
- b) A locomotive on MG Track has Three pair of Driving wheel each carry 20 T. What Maximum load can it Draw on a level Track with a Curvature of 2° at speed of 52.7 Kmph. What speed can be attained By a Train. Carrying the same load on the upgradient of 1 in 200? **7**
3. a) A 4° curve branches in B.G layout of Railway yard. if the speed on Branch line is restricted to 30 kmph, Calculate the Maximum speed that can be permitted on the Main line. Assume Cant Deficiency = 75 mm. **6**
- b) What are the objectives of providing Ballast in the permanent way. Also Discuss the various Types of Ballast. **7**

OR

4. a) Explain the various Types of Rail with their advantages & Disadvantages. **6**
- b) What would be the permissible speed on the curve if on 8° MG Track the average speed of Different Train 50 kmph and allowable cant Deficiency is half that of Maximum Cant Deficiency. **7**
5. a) Draw a Neat Diagram of Left Hand turnout and show its various components parts. **8**
- b) What is the Necessity of direct Track Maintenance? Discuss. **6**

OR

6. a) Explain in detail the various signal used in railway. **6**
- b) Write short note on. **8**
- i) Interlocking.
- ii) Marshalling yard.
7. a) Discuss the various Factors which are to be considered while selecting a suitable site for an airport. **6**
- b) An Airport is proposed at an elevation of 400 m above MSL where the mean of maximum and mean of average Daily Temperature of Hottest month are $44^{\circ}8^{\circ}\text{C}$ and $26^{\circ}2^{\circ}\text{C}$ repetitively The Maximum elevation Difference along the proposed profile runway is 6.3. If the Basic runway length is 1260 m, Determine the actual length of Runway to be provided. **7**

OR

8. a) Explain wind Rose Diagram in detail. **7**
- b) Discuss the characteristics of an aircraft that influences the planning & Design of airport facilities. **6**
9. a) What do you understand by Terminal area? What facilities are provided in this area? **7**
- b) Explain the Need of air Traffic control. **6**

OR

10. a) Discuss with Neat sketch, 'Runway Lighting'. **7**
- b) Explain in Detail about the various Runway marking. **6**
11. Write short note on **any three**. **14**
- i) Tunnel lining. ii) Drainage in Tunnel.
- iii) Lighting in Tunnel iv) Economics of Tunneling

OR

12. a) What are the object of Tunnel ventilation? Discuss the requirement of a ventilating system. **7**
- b) What are the objects of providing a Tunnel with permanent lining? Discuss in brief the various material used for lining. **7**
