B.E. (Civil Engineering) Seventh Semester (C.B.S.)

Transportation Engineering - II

P. Pages : 2 **NJR/KS/18/4581**

Time : Three Hours * 0 2 3 4 * Max. Marks : 80

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.

1. a) What do you understand by "Permanent Way"? Discuss the requirements of ideal permanent way. **7**

b) A locomotive on M. G. Track has a three pairs of driving wheels each carrying 17.27 tonne. What maximum load can it draw on a level track with a curvature of $2^{\underline{o}}$ at a speed of 48.3 Kmph. What speed can be attained by a train, carrying the same load on an up gradient of line 250? **6**

OR

2. a) What are the possible causes of creep? Discuss in brief comment on prevention of creep. **6**

b) What is mean by coning of wheel? Explain with Diagram. **7**

3. a) What are the objectives of providing ballast in the permanent way. Also discuss the various types of ballast. **6**

b) A 6 degrees curve branches off from a 3 degrees main curve in an opposite direction in the layout of a B. G. Yard. If the speed on branch line is limited to 35 kmph, determine the speed restriction on the main line. **7**

OR

4. a) Discuss the various types of rail failures with sketches. **7**

b) On a B. G. 3 degree curve, "the equilibrium cant" is provided for a speed of 70 kmph. **6**
   a) Calculate the value of the equilibrium cant.
   b) Allowing a maximum cant deficiency, what would be the maximum permissible speed on the track.

5. Write notes on **any three.** **14**
   i) Heel divergence.
   ii) Throw of switch.
   iii) Tongue rail.
   iv) Objects of signaling.
   v) Interlocking.

OR

6. Write notes on **any three.** **14**

i) Check rails.
ii) Home signal.
iii) Starter signal.
iv) Marshaling Yards.
v) Left hand Turn-out.

7. a) Calculate the actual runway length required if the new airport is to be developed at a site having following details. **7**

i) Elevation = 1400m.
ii) ART = 37° C.
iii) Baric Runway length = 2500m.
iv) Effective gradient = 0.38%.

Check the correction as per the ICAO aircraft.

b) Define the terms: **6**

i) Cross-Wind component ii) Wind coverage.

OR

8. a) Enumerate the various factors which are to be considered while selecting a suitable site for an airport. Explain in brief. **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) Write short notes on: **6**

i) Approach lighting. ii) Runway markings.

OR

10. a) What are the characteristics of an ideal airport layout? **7**

b) The length of runway under standard conditions is 1620m. The airport site has an elevation of 270m. Its reference temperature is 32.90° C. If the runway is to be constructed with an effective gradient of 0.20 percent, determine the corrected runway length. **6**

11. Write notes on **any three.** **14**

i) Tunnel lining.
ii) Drainage in Tunnels.
iii) Lighting in Tunnel.
iv) Economics of Tunneling.

OR

12. a) Write in detail Tunnel Surveying. **7**

b) Why ventilation is needed during & after the tunnel construction? How it is provided? Explain. **7**

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