B.E. Civil Engineering (Model Curriculum) Semester-VII

PCC-4 / PCC4-CE704 - Transportation Engineering-II

P. Pages : 2 **GUG/W/23/14287**

Time : Three Hours * 7 8 4 1 * Max. Marks : 80

Notes : 1. All questions carry equal marks.
2. Due credit will be given to neatness and adequate dimensions.
3. Illustrate your answers wherever necessary with the help of neat sketches.

1. a) What are the functions of rails? Name the various types of rails in use. Which one is widely used now? How the weight of a rail section is usually determined? **8**

b) Define sleeper density. Calculate the number of sleepers required for laying a B.G. track of 650m length using sleeper density of (n+6) **8**

OR

2. a) Explain briefly how the pressure created by wheel loads is transmitted through the ballast. What factors of the ballast influence the intensity of the pressure on the formation? **8**

b) Illustrate with sketches the various fastenings used to fasten rails to sleepers. Discuss their merits and demerits. **8**

3. a) What are the facility requirements of railway station? Classify the railway stations. Draw a neat sketch of layout of any one type of station. **8**

b) Derive the relationship of superelevation with gauges, speed and radius of curve. **8**

OR

4. a) Write short notes on **any two-** **8**

i) Marshalling yard ii) Negative superelevation
iii) Ruling Gradient iv) Grade compensation on curves

b) A 8º curve track diverges from a main curve of 5º in the opposite direction. In the layout of a BG yard, calculate the superelevation and the speed on the branch line when the maximum speed permitted on the main line is 45 km/h. **8**

5. a) Describe the various methods of hard rock tunneling and mention advantages & disadvantages of each method? **8**

b) What are the objectives of tunnel ventilation? Discuss the requirement of a ventilation system. **8**

OR

6. a) Explain the necessity of ventilation during the construction of tunnel. How it is provided. **8**

b) What are the objectives of providing a tunnel with permanent lining? Discuss various lining materials in brief. **8**

7. a) Compute the actual runway length for the following data: - **8**

i) Basic runway length = 1900m

ii) Airport elevation = 150m above MSL

iii) Effective gradient = 0.36%

iv) Airport reference temperature = 38ºC

b) Discuss the various points to be considered for selection of site for major airport? **8**

OR

8. a) Explain how a runway is oriented with the help of wind rose diagram? **8**

b) Explain with neat sketches the limiting heights of objects in the approach and turning zones of an instrumental runway. **8**

9. a) Enlist various 'Airport lightings' with the neat sketch. **8**

b) Describe various aircraft parking system. **8**

OR

10. a) What are the design considerations for a taxiway lightning? Explain with neat sketches. **8**

b) What do you understand by airport classification? Explain in details. **8**

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