

B.E. (Civil Engineering) Model Curriculum Semester-VII
PCC4-CE704 - Transportation Engineering-II

P. Pages : 2

Time : Three Hours



GUG/W/24/14287

Max. Marks : 80

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

1. a) Define gauge of railway track. Innumerate different gauges used in India and explain it. 5
- b) What are the desirable qualities or requirements of good sleepers? 5
- c) A B.G. track has a sleeper density of $M + 6$. If the track is laid with welded rails of 26 m length, find out the number of sleepers on rail length. 6

OR

2. a) Find out the expression for sleeper density for a B.G. track if 19 sleepers are used under a rail length. 6
- b) Write down the different type of rail. Explain it with neat sketch. 10
3. a) What will be the gradient of broad-gauge track when a great resistance together with curve resistance due to 3° shall be equal to the resistance due to ruling gradient of 1 in 200? 8
- b) Determine the length of transition curve and draw the offsets at every 15 m. Given that the design speed of the train on curve is 90 kmph on a BG track. 8

OR

4. a) Determine the length of transition curve and draw the offsets at every 15 m. Given that the design speed of the train on curve is 90 kmph on a B.G. track. 8
- b) Five degree curve diverges from a main curve of 4 degree in an opposite direction in the layout of a Broad Gauge yard. If the speed on the main curve is restricted to 54.33 kmph, determine the speed restriction on the branch line. Assume permissible cant deficiency as 7.5 cms. 8
5. a) For 12.8 m rail length of B. G. track, calculate the quantity of materials required per kilometer length of track. Assume sleeper density to be equal to $(M + 4)$. Type of rail 90 R i.e. weight = 44.7 kg/m. 10
- b) Describe the various methods of hard rock tunneling and mention advantages & disadvantages of each method? 6

OR

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| 6. | a) | What is the necessity of railway tunnels? Draw a sketch to illustrate a single track railway tunnel. | 8 |
| | b) | Describe the various methods of hard rock tunneling and mention the advantages & disadvantages of each of them. | 8 |
| 7. | a) | The runway length required for landing at sea level in standard atmospheric condition is 3000 m, runway length required for take off at a level site at sea level in standard atmospheric condition is 2500 m. Aerodrome reference temperature is 25°C and that of standard atmosphere at aerodrome elevation of 150 m is 14.25°C. If the effective runway gradient is 0.5% determine runway length. | 10 |
| | b) | Discuss the various factors which are to be considered while selecting a suitable site for an airport. | 6 |

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| 8. | a) | Explain with neat sketches the limiting heights of objects in the approach and turning zones of an instrumental runway. | 8 |
| | b) | Name the different characteristics of aircraft. How do they affect the planning and design of airport. | 8 |
| 9. | a) | What do you understand by terminal area? | 8 |
| | b) | What are different system of aircraft parking? Explain one with neat sketch. | 8 |

OR

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| 10. | Write notes on any four . | 16 |
| | i) Hanger | |
| | ii) Runway markings. | |
| | iii) Approach lighting. | |
| | iv) Calm period. | |
| | v) Exit Taxiway | |
| | vi) Portals | |
