

B.E. Sixth Semester (Third Year) (Civil Engineering) (Part Time) (Annual Pattern) (CGS)
Transportation Engineering - II : 6 CE 04

P. Pages : 2

Time : Three Hours



AU - 3532

Max. Marks : 80

- Notes :
1. All question carry marks as indicated.
 2. Answer **three** question from section A and **three** question from section B.
 3. Assume suitable data wherever necessary.
 4. Illustrate your answer necessary with the help of neat sketches.
 5. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION - A

1. a) What are the characteristics of Railway transportation? Explain in brief. 6
b) Explain various resistance which a Locomotive has to overcome before hauling a train. 7

OR

2. a) Draw a typical cross section of B.G. track in cutting showing various component and dimensions. 6
b) Compute the steepest gradient that a train of 20 wagons with a Locomotive can travel with the following data 7
 - i) Weight of each wagon = 20 tonnes
 - ii) Weight of Locomotive = 150 tonnes
 - iii) Tractive effort of Locomotive = 15 tonnes
 - iv) Rolling resistance of Locomotive = 3 kg/tonne.
 - v) Rolling resistance of wagon = 2.5 kg/tonne
 - vi) Speed of the train = 60 kmph
3. a) Explain the necessity of gradients. Discuss all the types of gradient adopted on Indian Railways. 7
b) What do you understand by sleeper density? State the factors governing sleeper density. Find out the number of sleeper required for construction of BG track of 1280m. Use sleeper density of $n+5$ 7

OR

4. a) What are the types of rail joints? Explain with neat sketches. 7
b) A five degree curve diverges from a three degree main curve in the reverse direction in the layout of broad gauge yard. If the speed on the branch line is restricted to 35 kmph. Determine the restricted speed on the main line. 7
5. a) Differentiate between way side station and Terminal station. 6
b) What are the objects of providing the signalling system? Explain how the signals are classified and state the purpose of each. 7

OR

6. a) Why a Turn Table is required in a station yard? Explain its working principle. 6
b) Explain the scissor crossover and track triangle along with neat sketches showing necessary details. 7

SECTION - B

7. a) Explain the components of Aeroplane with neat sketch. 7
b) Explain in brief the various types of imaginary surfaces. 7

OR

8. a) What are the characteristics of aircraft? Discuss important dimensions involved in size of aircraft with suitable sketches. 7
b) A taxiway is to be designed for operating Boeing 707-320 which has the following characteristics. Determine the turning radius of the taxiway. 7
i) Wheel base = 17.70
ii) Trade of main loading gear = 6.62 m.
iii) Turning speed = 40 kmph
iv) Coefficient of friction between tire and pavement surface = 0.13

9. a) Explain the planning considerations of terminal building for a commercial airport. 6
b) Describe in brief the need of air traffic control. 7

OR

10. a) What are the different systems of aircraft parking? Explain the suitability of each system. 7
b) Explain the terms exit taxiway, fillets, separation clearance and holding apron. 6
11. a) What is a tunnel? Briefly discuss the circumstances under which tunnel is adopted. 6
b) What are the various operations involved in soft ground tunneling? Explain in brief. 7

OR

12. a) Explain the methods adopted for removal of ground water. 6
b) What is the necessity of providing ventilation in tunnel? Explain various methods of ventilation in tunnel. 7
