

This question paper contains 3 printed pages.

3319

Your Roll No.

B. Tech. (C) / III

**Paper ECE-302—TRANSPORTATION
ENGINEERING**

Time : 3 hours

Maximum Marks : 70

*(Write your Roll No. on the top immediately
on receipt of this question paper.)*

Attempt any five questions.

Assume suitable data, if necessary

1. (a) Describe Macadam Road Construction. Show all details on a neat sketch. 7
- (b) What is the importance of Highway Planning? Briefly discuss the objectives of Highway Planning. 7
2. (a) The design speed for a 2-lane National Highway in a plain terrain is given as 100 kmph. Determine the length of transition curve which may be provided on a horizontal curve of 400 m radius. 7
- (b) A vertical curve is formed at the intersection of two gradients +3.3 percent and -4.7 percent. Design the length of vertical curve to provide a stopping sight distance for a design speed of 100 kmph. 7
3. (a) Design two phase traffic signal at a crossing of
P. T. O.

road A and road B. The average normal flow of traffic on road A and road B during peak period is 350 and 225 PCU per hour respectively. The saturation flow values on these roads is estimated as 1250 and 1000 PCU per hour respectively. The all red time for pedestrian crossing is given as 12 sec. 7

(b) Discuss the various methods of traffic volume studies. 7

4. (a) Draw a typical cross-section of a broad gauge railway track. Discuss the functions of its various components. 7

(b) Explain grade compensation on railway track. If the ruling gradient is 1 in 150 on a particular section of broad gauge and at the same time a curve of 4 degree is situated on this ruling gradient, what should be the allowable gradient? 7

5. (a) Define wear of rail. Briefly discuss the causes of wear and also their remedial measures. 7

(b) In the layout of B.G. yard, a branch line with 5° curve diverges in reverse direction from a main line with 3° curve. Determine the speed limit for main line if it is restricted to 35 kmph on branch line. 7

6. (a) What do you understand by Basic Runway

Length? Design the length of runway for the airport site at an elevation of 270 m. Mean of the average daily temperature and that of the maximum daily temperature for the hottest month is estimated as 26.3°C and 43.7°C respectively. Basic runway length is given as 1620 m. 7

(b) Determine the radius of a taxiway for a supersonic transport aircraft whose wheel base is 35 m and the tread of main landing gear is 7.2 m. The design turning speed is 60 kmph. Assume any other data, if required. 7

7. (a) Discuss the advantages and disadvantages of water transport. Briefly describe the different kinds of Harbours. 7

(b) Explain the types of tunnels and also the circumstances when tunnel is used. 7

8. Write short notes on any *four* of the following:

(i) Soil stabilisation

(ii) CBR method for design of pavement

(iii) Directed Track Maintenance (DTM) Method

(iv) Automatic Signalling

(v) Wind Rose Diagram

(vi) Syncrolift.

3½×4