

Total No. of printed pages = 3

19/5th Sem/DCE505

2021

**TRANSPORTATION ENGINEERING**

Full Marks – 100

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer any *five* questions.

1. (a) Explain the role of transportation in the overall development of any country. 10
- (b) Explain the characteristics of road transportation. 10
2. (a) Briefly outline the historical development of road construction. 5
- (b) What are the significant recommendations of Jayakar committee report ? Mention how this helped in road development in India ? 5
- (c) Briefly sketch the various road patterns commonly in use. 5
- (d) What are the basic requirements of an ideal highway alignment ? List and explain briefly. 5

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3. (a) Define camber. What are the purposes of providing it ? 5
- (b) Derive an expression for SSD. 5
- (c) Calculate the SSD on a highway at a descending gradient of 2% for a design speed of 80 kmph. Assume other data as per IRC recommendations. 5
- (d) Design the rate of superelevation for a horizontal highway curve of radius 500m and speed 100 kmph. 5
4. (a) What are the purposes of widening of pavement on horizontal highway curve ? 5
- (b) The stopping sight distance required for a highway is 80m. Find the required set back distance from centre line of a circular curve of radius 300m, assuming the length of the curve is greater than the sight distance. 5
- (c) A vehicle travelling at 45 kmph was stopped within 2.2 seconds after the application of the brakes. Determine the average skid resistance developed. 5
- (d) Differentiate between rigid and flexible pavement. 5



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5. (a) What are the desirable properties of road aggregates used in highway construction ?  
10
- (b) What is origin and destination study ? Explain its significance. Explain various methods adopted for the study. 10
6. (a) Calculate the OSD for a design speed of 96 kmph. Assume other data suitably. 10
- (b) Draw the cross section of railway track and explain functions of its various components. 10

