

2023

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) What are the uses of traffic volume studies? 5
b) What are the applications of origin and destination studies? 5
c) Explain different methods to conduct speed and delay studies. 10
2. a) What are the functions of rails? 5
b) What are the functions of sleepers? 5
c) Explain different methods to conduct origin and destination studies. 10
3. a) What are the advantages and disadvantages of wooden sleeper? 5
b) What are the functions of ballast? 5
c) Draw the neat sketch of railway track and explain the functions of its components. 10
4. a) What are the advantages and disadvantages of metal sleeper? 5
b) What are the requirements of good ballast material? 5
c) Explain the construction procedure of bituminous pavement. 10
5. a) What are the advantages and disadvantages of concrete sleeper? 5
b) Explain different types of ballast. 5
c) The design speed for a national highway is 80 kmph. Design SSD, Radius of horizontal curve, Superelevation, Extra widening of pavement on horizontal curve, Length of transition curve. 10
6. a) A valley curve is formed by a descending gradient of 1/25 meeting an ascending gradient of 1/30. Design the length of valley curve for a speed of 80 kmph. 5
b) An ascending gradient of 1 in 100 meets a descending gradient of 1 in 120. Design the length of summit curve for an overtaking sight distance of 470 m. 5
c) Explain the factors controlling highway alignment. 10
