

B.Tech III Year II Semester (R13) Regular & Supplementary Examinations May/June 2017

TRANSPORTATION ENGINEERING – I

(Civil Engineering)

Time: 3 hours

Max. Marks: 70

PART – A
(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- What are Javakar committee recommendations?
 - What are the requirements of good alignment?
 - Define stopping sight distance and intermediate sight distance.
 - What is the need for transition curve in a horizontal alignment?
 - What is the relationship between speed and density?
 - Define 'saturation flow' used in signal design by Webster method.
 - What are the conflicts that occur at intersections?
 - What is weaving movement?
 - What is the difference in stress distribution in flexible pavements and rigid pavements?
 - What is radius of relative stiffness?

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

- 2 What are the time salient features of Bombay Road Development Plan? In what aspects it differs from Nagpur Road Development Plan?

OR

- 3 What are obligatory points? How they influence a change in the alignment? Support your answer with neat diagrams.

UNIT – II

- 4 Why super elevation is required on a horizontal curve? Clearly analyze the various forces acting on a body of a vehicle moving on a super elevated section of a horizontal curve, derive an equation for the rate of super elevation 'e'.

OR

- 5 A National highway is to be designed for a speed of 100 kmph. The highway is of two lanes and is passing through a level terrain. A horizontal curve of 350 m radius is proposed at a location and the super elevation is to be provided by rotating the pavement about the centre line. The rate of introduction of super elevation is 1 in 120. Compute the length of transition curve needed.

UNIT – III

- 6 What are the objectives of speed studies? What are the methods of presentation of speed data?

OR

- 7 Discuss about various Engineering measures that can help in reducing time accident rate.

UNIT – IV

- 8 What is channelization? How traffic can be controlled and regulated at intersection by traffic islands? Support your answer with neat diagrams.

OR

- 9 What are the various design elements of a rotary intersection? What are their design specifications? Support our answer with neat diagrams.

UNIT – V

- 10 (a) What factors play a crucial role in pavement design? Explain.
(b) What are the different layers normally designed in flexible pavements? What are the functions of these layers? Explain.

OR

- 11 (a) Explain Westergaard theory about critical stresses in rigid pavements.
(b) Explain about Warping stresses in rigid pavements.