

Code: CE5T5

**III B.Tech - I Semester – Regular/Supplementary Examinations
October 2018**

**TRANSPORTATION ENGINEERING - I
(CIVIL ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

PART – A

Answer *all* the questions. All questions carry equal marks

11x 2 = 22 M

1.

- a) Define key map and index map.
- b) What are the recommendations of Jayakar Committee?
- c) Explain the effect of off-tracking of vehicles.
- d) While aligning a hill road with a ruling gradient of 6 %, a horizontal curve of radius 80m is encountered. Find the compensated gradient of the curve?
- e) Draw the basic relations between speed, flow and density.
- f) Define Weaving traffic.
- g) Draw a neat sketch of cloverleaf intersection indicating the vehicular movement.
- h) Define dowel bar and what are its uses.
- i) Define tack coat and what is its purpose.
- j) What are the various equipment's used in the construction of bituminous roads?
- k) Differentiate soil-cement stabilization with soil-lime stabilization.

PART – B

Answer any **THREE** questions. All questions carry equal marks.

3 x 16 = 48 M

2. a) Explain different road network patterns with neat sketches. 8 M
- b) Briefly explain about the different highway development plans. 8 M
3. a) There is a horizontal curve of radius 500m and length 250m on a highway. Compute the set-back distances required from the centre line on the inner side of the curve so as to provide for a stopping sight distance of 130m. 8 M
- b) Explain different types of road traffic signs along with its specification. 8 M
4. a) Explain different types of traffic islands with neat Sketches. 5 M
- b) Explain any two tests on bitumen in detail with their limits. 6 M
- c) What are the advantages and disadvantages of rotary intersection. 5 M

5. a) Explain the functions of various layers in flexible pavement with a neat sketch. 8 M
- b) Calculate the stresses at interior, edge and corner regions of a concrete pavement using Westergaard's equation for the following data. Wheel load = 4100 kg, modulus of elasticity of concrete is $3.3 \times 10^5 \text{ kg/cm}^2$, pavement thickness is 30 cm, modulus of subgrade reaction is 8 kg/cm^3 , diameter of loaded area is 25 cm, Poisson's ratio of concrete is 0.15. Assume data if any required. 8 M
6. a) Briefly explain the stepwise procedure for the construction of cement concrete road. 8 M
- b) Explain soil-lime stabilization techniques. 8 M