(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 2131   **Roll No.** | | | | | | | | | | | |

B. Tech.

(SEM. V) ODD SEMESTER THEORY EXAMINATION 2010-11

TRANSPORTATION ENGG.—I

Time : 2 Hours   *Total Marks : 50*

Note :— (1)   Attempt **all** questions.

(2)   Marks are indicated against each question.

(3)   Assume any data suitably, if required.

1.   Attempt any **four** parts of the following :   (3×4=12)

(a)   Write the salient features of First Twenty Year road development plan.

(b)   Calculate the length of transition curve using the following data :

Design speed = 65 kmph, Radius of circular curve = 230 m, Allowable rate of introduction of super elevation (pavement is rotated about the central line) = 1 in 150, Pavement width including extra widening = 7.65 m.

(c)   Calculate the SSD and OSD for a design speed of 100 kmph. Assume all data suitably.

(d)   What is super elevation ? Write the step by step procedure of designing the super elevation.

(e) A valley curve is formed by a descending grade of 1 in 25 meeting an ascending grade of 1 in 30. Design the length of valley curve to fulfil both comfort condition and head light sight distance requirements for a design speed of 80 kmph. Take $C = 0.6$ m/sec^3.

(f) What is a camber ? How the camber is designed ?

Attempt any **two** parts of the following : **(6×2=12)**

(a) With the help of neat sketches explain the use of various types of traffic signs.

(b) How the spot speed data is collected in the field ? Explain the procedure for determining the various percentile speeds with the help of graphical presentation.

(c) With the help of graphical presentations show the relationship between (i) Traffic Speed and volume (ii) Traffic Speed and density and (iii) Traffic volume and density. Define the terms like Traffic volume, Traffic speed and Traffic density also.

3. Attempt any **two** parts of the following : **(6½×2=13)**

(a) What are the different types of pavements ? Write in brief the step by step procedure of designing the flexible pavement, as per IRC : 37-2001.

(b) Calculate the stresses at interior, edge and corner of a cement concrete pavement by Westergaard's stres equations. Take modulus of elasticity o CC = 3.0×10^5 kg/cm^2, Poisson's ratio of CC = 0.1: thickness of CC pavement = 18 cm, modulus of subgrac reaction = 8.5 kg/cm^2, wheel load = 5100 kg and radius loaded area = 15 cm.

(c) What are the different types of joints provided in CC pavements ? How the joints are designed ?

4. Attempt any **two** parts of the following : (6½×2=13)

(a) Write short notes on :

I. Surface dressing,

II. Prime Coat,

III. Tack Coat and

IV. Seal Coat.

(b) Write in brief the construction procedure and material specifications of a WBM road.

(c) Write in brief the steps of CC road construction.

(c) What are the different types of joints provided in CC pavements ? How the joints are designed ?

4. Attempt any **two** parts of the following : (6½×2=13)

   (a) Write short notes on :

   I. Surface dressing,

   II. Prime Coat,

   III. Tack Coat and

   IV. Seal Coat.

   (b) Write in brief the construction procedure and material specifications of a WBM road.

   (c) Write in brief the steps of CC road construction.