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BICE-020

B.Tech. CIVIL ENGINEERING (BTCLEVI)

00196

Term-End Examination

June, 2015

BICE-020 : TRANSPORTATION ENGINEERING – II

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **seven** questions. All questions carry equal marks. Assume suitable data wherever necessary. Use of scientific calculator is allowed.*

1. (a) Explain the classification of roads based on location and function as suggested in Nagpur Road plan. *5*

(b) Explain the transportation planning process with a brief description of each stage. *5*

2. (a) Write a note on PIEV theory. *5*

(b) Describe any five elements of road margin. *5*

3. Design the following geometrical features for a highway in a built-up area, if the radius of the circular curve is 325 m : *10*

(a) Superelevation

(b) Extra widening

(c) Length of transition curve

(Design speed = 65 kmph, Length of the longest vehicle = 6·0 m and pavement width = 10·5m)

4. Explain in detail the Marshall method of mix design. *10*

5. (a) Compute the radius of relative stiffness of 20 cm thick cement concrete slab from the following data : *5*

Modulus of elasticity of cement concrete = 2,10,000 kg/cm^2

Poisson's ratio for concrete = 0·15

Modulus of subgrade reaction, k =

(i) 3·0 kg/cm^3 and

(ii) 7·5 kg/cm^3

(b) Draw and neat cross-section of a flexible pavement and explain the function of each pavement layer. *5*

6. (a) Write down the construction steps for water bound macadam roads. *6*

(b) Briefly mention the common failures in flexible pavement. *4*

7. (a) Describe the following terms : *5*

(i) Traffic capacity

(ii) Traffic density

(iii) Signal cycle

(iv) Level of service

(v) Traffic volume

(b) What are the different types of controls at an intersection ? Show potential conflict points for two roads A and B meeting at grade. The road A is a two lane two way road and road B is a two lane road carrying one way traffic. *5*

8. (a) Write down the purpose of installing regulatory or mandatory signs and draw neat sketches of regulatory or mandatory signs. *6*

(b) State warrants for traffic signal installation. *4*

9. (a) Explain with a neat labelled sketch the process of surface drainage. *5*

(b) Write a short note on

"Benefit cost ratio method". *5*

10. (a) Classify the various modes of transport based on their operating characteristics. *6*

(b) Describe the various studies carried out during highway planning. *4*
