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BICE-020

B.Tech. CIVIL ENGINEERING (BTCLEVI)

Term-End Examination

December, 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) Distinguish between Nagpur road plan and Bombay road plan. 5
- (b) Draw the layout of the following : 5
 - (i) Radial or star and circular pattern
 - (ii) Hexagonal pattern
2. (a) What do you understand by highway alignment ? Explain various factors controlling highway alignment. 5
- (b) Describe the PIEV theory and specify the total reaction time as per IRC recommendations. 5
3. (a) The radius of a circular curve is 100 m. The design speed is 50 kmph and the design coefficient of lateral friction is 0.15.
- (i) Calculate the superelevation required, if full lateral friction is assumed to develop.

- (ii) Calculate the coefficient of friction needed, if no superelevation is provided. 7
- (iii) Calculate the equilibrium superelevation, if the pressure on inner and outer wheels should be equal. 7
- (b) Briefly describe how overtaking sight distance is calculated. 3
4. (a) Write down any five tests conducted on highway materials along with their significance. 5
- (b) Define emulsions. Explain the uses of bituminous emulsions and describe how they are prepared. 5
5. (a) Write a note on ESWL. 5
- (b) Differentiate between flexible and rigid pavements. 5
6. Write a detailed note on 'Construction of bituminous roads'. 10
7. Enlist and briefly describe the various traffic studies that are normally carried out. 10

8. (a) Draw neat sketches of the traffic signs/road markings mentioned below and explain their uses/applications in the field : 5
- (i) No stopping or standing
 - (ii) Vehicles prohibited in both directions
 - (iii) Cross road
 - (iv) Give way
 - (v) Single continuous line to the left of a broken line
- (b) Draw and explain the fundamental diagrams of traffic flow. 5
9. (a) With the help of a neat sketch, show the sub-surface drainage system with longitudinal and cross drains. 5
- (b) Write the factors on which the motor vehicle operation cost depends. 5
10. (a) Briefly describe various traffic management measures applied in the field. 4
- (b) Describe the steps for executing a new highway project. 6
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