

**B.Tech. CIVIL ENGINEERING (BTCLEVI)**

**Term-End Examination**

**June, 2016**

00386

**BICE-020 : TRANSPORTATION ENGINEERING – II**

*Time : 3 hours*

*Maximum Marks : 70*

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

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1. (a) Discuss the classification of roads. 5  
(b) Describe briefly, the various planning surveys to be carried out for highway development. 5
2. (a) Explain the land use transport model. 5  
(b) Discuss the various requirements of an ideal highway alignment. 5
3. (a) Describe Right of Way. What are the factors which govern the right of way? 5  
(b) The speeds of overtaking and overtaken vehicles are 80 and 60 kmph respectively. If the acceleration of the overtaking vehicle is 2.5 kmph per second, then calculate the safe passing sight distance for two-way traffic. 5

4. (a) Design the length of vertical curve that is formed, when an ascending gradient of 1 in 25 meets another ascending gradient of 1 in 100, for safe stopping sight distance required for design speed of 80 kmph. 5
- (b) Discuss the desirable properties of bituminous mixes. 5
5. (a) Discuss the various factors that are considered in the design of pavements. 5
- (b) Find the radius of relative stiffness and radius of resisting section for a concrete slab from the following data :
- Modulus of elasticity of concrete =  $310000 \text{ kg/cm}^2$
- Poisson's ratio of concrete = 0.15
- Modulus of subgrade reaction =  $6 \text{ kg/cm}^3$
- Thickness of concrete slab = 22 cm
- Radius of wheel contact area = 15 cm. 5
6. (a) What are the different types of joints in concrete pavement ? Discuss the necessity of these joints. 5
- (b) Discuss the importance of highway drainage. 5

7. (a) Write the construction steps of Bituminous Macadam. 5
- (b) Write down the general causes of pavement failures. 5
8. (a) Explain spot speed, running speed, space-mean speed, time-mean speed and average speed. 5
- (b) Describe the concept of traffic congestion. 5
9. (a) What are the various types of traffic signs? Differentiate them with neat sketches. 5
- (b) Explain the advantages and disadvantages of over-pass and under-pass, comparatively. 5
10. Write short notes on the following : 5+5=10
- (a) Vehicle Operating Cost
- (b) Intelligent Transportation System
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