

B.Tech. CIVIL ENGINEERING (BTCLEVI)

Term-End Examination

June, 2017

00334

BICE-020 : TRANSPORTATION ENGINEERING – II

Time : 3 hours

Maximum Marks : 70

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

1. (a) Discuss the scope of Highway Engineering in detail. 7
- (b) Write the characteristics of Road Transport. 7
2. (a) Briefly explain the engineering surveys needed for locating a new highway. 7
- (b) Explain the various factors which control highway alignment. 7
3. (a) What do you understand by sight distance ? Calculate the safe stopping sight distance for design speed of 50 kmph for (i) two-way traffic on a two-lane road, and (ii) two-way traffic on a single lane road. Assume coefficient of friction as 0.37 and reaction time of driver as 2.5 seconds. 3+5

- (b) Explain the following briefly : 2×3=6
- (i) Overtaking Sight Distance (OSD)
 - (ii) Overtaking Zones
4. (a) Compute the radius of relative stiffness of a 15 cm thick cement concrete slab from the following data : 7
- Modulus of elasticity of cement concrete
= 210000 kg/cm²
- Poisson's ratio for concrete = 0.13
- Modulus of subgrade reaction, K :
- (i) 3.0 kg/cm³
 - (ii) 7.5 kg/cm³
- (b) Write down the construction procedure for the Water Bound Macadam Road. 7
5. (a) Discuss the following measures for the reduction in accident rates : 9
- (i) Engineering
 - (ii) Enforcement
 - (iii) Education
- (b) The free mean speed on a roadway is found to be 80 kmph. Under stopped condition the spacing between vehicles is 6.9 m. Determine the capacity flow. 5



6. (a) Discuss the importance of highway economy studies. 7

(b) Explain the following briefly : $2 \times 3 \frac{1}{2} = 7$

(i) Vehicle Operation Cost

(ii) Annual Highway Cost

7. Write short notes on any **four** of the following : $4 \times 3 \frac{1}{2} = 14$

(a) Dowel Bar

(b) Los Angeles Abrasion Test

(c) Rotary Intersection

(d) Regulatory Signs

(e) Origin and Destination Studies
