

A 195

B.E/B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2005.

Fifth Semester

Civil Engineering

CE 335 – TRANSPORTATION ENGINEERING – I

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State the basic requirements of an ideal alignment between two terminal stations.
2. Mention the functions of medians.
3. What is called superelevation?
4. Define "Gradient".
5. State the functions of wearing course.
6. Define "CBR".
7. What is called toughness and soundness of stone aggregates?
8. Define "Softening point of bitumen".
9. What are the causes of formation of ruts in flexible pavements?
10. State the causes for the scaling of cement concrete pavements.

PART B — (5 × 16 = 80 marks)

11. (i) State the various wheel load factors to be considered in pavement design. (5)
- (ii) Explain the essential differences between rigid and flexible pavements. (11)

12. (a) (i) State the construction steps of Macadam method of road formation. (5)
(ii) Describe the various steps in a new highway project. (11)

Or

- (b) How urban roads are classified? Explain. (16)

13. (a) Describe the various types of horizontal curves. (16)

Or

- (b) (i) Under what circumstances summit curves are provided. (6)

- (ii) Calculate the stopping sight distance required to avoid head on collision of two cars approaching from opposite directions at a speed of 75 kmph and 85 kmph. Assume that the reaction time of drivers be 2.5 secs. and the coefficient of friction between road surface and tyres be 0.4. (10)

14. (a) Explain how aggregate impact test is carried out in laboratory. (16)

Or

- (b) (i) Describe the construction procedure for bitumen concrete. (9)

- (ii) Explain how sub-surface drainage may be carried out. (7)

15. (a) (i) State the typical failures in sub base under flexible pavements. (4)

- (ii) Explain the repair work carried out for the following rigid pavement failures.

(1) Mud pumping (6)

(2) Warping cracks (6)

Or

- (b) (i) State and explain the routine or periodic maintenance work carried out for highways. (8)

- (ii) Explain the various methods of pavement evaluation. (8)