

R 8144

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2006.

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. What is called as kerb in highway engineering? State its functions.
2. What are obligatory points? State at least two examples of the same.
3. What is meant by passing sight distance?
4. Define "Super elevation".
5. State the functions of wearing course of pavements.
6. Define the concept of CBR.
7. What is called toughness of stone aggregates? Mention the name of the test used to determine the same in laboratory.
8. Mention different shapes of aggregates.
9. What is called rutting of pavements? Mention the causes of the same.
10. Define "Skid resistance". State its importance.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Discuss in detail, the classification of urban roads. Draw neat sketches as given by IRC. (16)
- (ii) State the factors controlling alignments. (4)

Or

- (b) (i) State the functions of medians. (4)
- (ii) Explain the principal objectives of IRC. (16)
12. (a) (i) Derive the formula to calculate super elevation. (16)
- (ii) Define "Ruling gradient". (4)

Or

- (b) (i) Explain the various situations where summit curves are used. (8)
- (ii) What is called grade compensation? Explain. (8)
13. (a) (i) What are the functions of soil sub grade? (6)
- (ii) Differentiate between rigid and flexible pavements. (10)

Or

- (b) (i) Explain the concept of Equivalent Single Wheel Load (ESWL) to be considered in the design of pavements. (12)
- (ii) Mention the factors to be considered for the design of plain jointed rigid pavements. (4)

14. (a) Describe how the following tests are carried out in laboratory :

- (i) Los Angeles abrasion test (8)
- (ii) Penetration test (7)

Or

- (b) (i) Explain the functions of surface drains in urban areas. (8)
- (ii) Describe the construction procedure for bituminous concrete roads. (8)

(a) (i) What are the different types of cracks that can occur in flexible pavements? Explain. (11)

(ii) What is called patching of flexible pavements? (5)

Or

(b) (i) How mud pumping occurs in cement concrete pavements? How it can be rectified? (9)

(ii) What is called "Benkelman beam"? Mention the application of the same in evaluation of pavements. (7)