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Question Paper Code : 57177

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016

Fifth Semester

Civil Engineering

CE 6504 – HIGHWAY ENGINEERING

(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

(Relevant IRC codes are allowed)

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. Write short notes on Highway Research Board.
2. What are Shoulders ?
3. What are the elements involved in Highway Geometric design ?
4. What is meant by extra widening at curves ?
5. What are the factors in Pavement Design ?
6. Define Critical load positions.
7. What is significance of static immersion test ?
8. Define flakiness index.
9. Differentiate delamination and depression.
10. What are the causes of cracks ?

PART – B (5 × 16 = 80 Marks)

11. (a) Explain the Bombay road congress 1961.

OR

- (b) Explain in detail the reconnaissance survey for Highway location in rural area.

12. (a) What are the factors affecting Sight distance ?

OR

- (b) The design speed of a highway is 80 kmph. There is a horizontal curve of radius 200 m on this road. If maximum super elevation of 1 in 15 is not to be exceeded calculate the maximum allowable speed on the curve. Also determine the extra widening required and length of the spiral transition curve using the following data. Length of the wheel base=6.1 m, Pavement width = 7.2 m and number of lanes = 2. Rate of introduction of super elevation is 1 in 200.

13. (a) Design the pavement for construction of a new bypass with the following data:

1. Two lane carriage way
2. Initial traffic in the year of completion of construction = 400 CVPD (sum of both directions)
3. Traffic growth rate = 7.5 %
4. Design life = 15 years
5. Vehicle damage factor based on axle load survey = 2.5 standard axle per commercial vehicle
6. Design CBR of subgrade soil = 4%.

OR

- (b) Explain the Design of joints.

14. (a) What are the Desirable properties of aggregates ?

OR

- (b) Explain the Ductility test and Softening point test.

15. (a) Explain in detail the possible causes and remedial measures for joint failure.

OR

- (b) Explain the possible causes and remedial measures for joint spalling.