

Question Paper Code : 71576

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2017.

Fifth Semester

Civil Engineering

CE 6504 — HIGHWAY ENGINEERING

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

Use Relevant Tables and Charts of IRC 37-2001/IRC 58-2002.

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are classified roads in Nagpur plan?
2. What are the recommendations of Jayakar Committee?
3. What is the maximum and minimum super-elevation?
4. What are overtaking zones?
5. What are the types of Rigid Pavements?
6. Differentiate tack coat and prime coat.
7. What is the purpose of conducting abrasion test?
8. Define flakiness index.
9. What are the parameters that should be observed for evaluating a rigid pavement?
10. What are the causes of cracks?

PART B — (5 × 16 = 80 marks)

11. (a) What are the various classifications of roads?

Or

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

12. (a) What are the factors affecting geometric design? Explain.

Or

(b) The speed of overtaking and overtaken vehicles is 80 and 50 kmph respectively. On a two way traffic load, the acceleration of overtaking vehicles is 0.99 m/sec^2 . Calculate OSD, mention the minimum length of overtaking zone and draw the sketch of the overtaking zone with all details.

13. (a) (i) Design the pavement for construction of a new bypass with the following data : Two lane carriage way, Initial traffic in the year of completion of construction = 400 CVPD (sum of both directions), Traffic growth rate = 7.5%. Design life = 15 years, Vehicle damage factor based on axle load survey = 2.5 standard axle per commercial vehicle and Design CBR of subgrade soil = 4%.

(ii) What are the most important factor in the pavement design?

Or

(b) Explain the design of joints in rigid pavements.

14. (a) Explain the California Bearing Ratio Test.

Or

(b) What are the modern construction materials used for the construction of pavements? Explain their characteristics and usage in detail.

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

Or

(b) Explain the methods employed for evaluation of pavements and explain the evaluation of pavement by Benkelman Beam method and deflection measurements.