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Question Paper Code : 21252

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

Fourth Semester

Civil Engineering

CE 2255/CE 46/CE 1255 A/10111 CE 406/080100022 — HIGHWAY ENGINEERING

(Regulations 2008/2010)

(Common to PTCE 2255 — Highway Engineering for B.E. (Part-Time)
Third Semester — Civil Engineering — Regulations 2009)

Time : Three hours

Maximum : 100 marks

(Use of Tables and Charts in IRC 37 and IRC 58 are permitted)

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define camber.
2. What is carriage way?
3. What is meant by super elevation?
4. State PIEV theory.
5. Brief about flexible pavement.
6. Mention the types of joints in rigid pavements.
7. Define 'Softening point of bitumen'.
8. State the desirable properties of road aggregate.
9. What are the general causes of pavement failures?
10. Mention the types of skidding.

PART B — (5 × 16 = 80 marks)

11. (a) Describe the conventional and modern methods of engineering surveys to be carried out for highway locations.

Or

- (b) Elaborate the salient features of highway cross sectional elements.
12. (a) (i) Derive the formula for calculating super elevation on horizontal curve. (8)
- (ii) Explain the factors influencing overtaking sight distance. (8)

Or

- (b) 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 coefficient between road surface and tyres be 0.4.
13. (a) Explain the functions of the components of flexible pavements.

Or

- (b) Explain the factors governing the structural design of pavements.
14. (a) Explain the importance and procedure of California bearing ratio test.

Or

- (b) Explain the steps involved in the concrete mix design for concrete roads.
15. (a) Explain any three non-destructive testing methods of pavement deflection.

Or

- (b) Explain the procedure of overlay design by Benkelman beam method.