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Question Paper Code: 41012

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2015.

Fourth Semester

Civil Engineering

01UCE403 – HIGHWAY ENGINEERING

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

(Related IRC chart may be permitted)

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. State the requirements of an ideal highway alignment.
2. List out the functions of Highway Research Board (HRB).
3. Mention the objectives of transition curves.
4. Write the formula for widening of curves.
5. What is meant by a flexible pavement?
6. Mention the factors considered for designing pavements.
7. State the desirable properties of bitumen.
8. Define hill roads and give the classification of terrains.
9. Mention the types of maintenance of pavements.
10. Define skid resistance.

PART - B (5 x 16 = 80 Marks)

11. (a) Discuss about the various engineering surveys for highway alignment. (16)

Or

(b) Trace out the history of road development in India. (16)

12. (a) A two lane road has a design speed of 80 *kmph* has a curve of radius 240 *m*. Calculate (i) super elevation when full lateral friction is developed, (ii) coefficient of friction if no super elevation is provided, (iii) equilibrium super elevation when pressure on inner and outer wheels are equal. (16)

Or

(b) Explain the different types of gradients. (16)

13. (a) Explain the factors that are to be considered for designing pavements. (16)

Or

(b) Explain CBR method of designing flexible pavements. (16)

14. (a) Describe the following tests on aggregates with sketches: (i) Impact test (ii) Los Angeles Abrasion test. (16)

Or

(b) (i) Explain the different systems of highway drainage. (8)

(ii) Explain the construction of concrete roads. (8)

15. (a) Discuss the typical failures occurring in flexible pavements. (16)

Or

(b) Explain the various steps involved in Highway Project formulation. (16)