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**Question Paper Code: 31413**

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

Fourth Semester

Civil Engineering

01UCE403 – HIGHWAY ENGINEERING

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. List the objectives of IRC Highway Research Board.
2. Label the scope of highway engineering.
3. Identify the geometric design of highway elements.
4. Express super elevation.
5. Summarize the factors should be considered in the design of flexible pavement.
6. Relate the purpose the contraction joints is provided.
7. Indicate the importance of studying behavior of soil as a highway material.
8. Mandate the desirable properties of road aggregates.
9. Judge the classification of maintenance.
10. What is the purpose of pavement evaluation?

PART - B (5 x 16 = 80 Marks)

11. (a) Describe the factors influencing highway alignment.

(16)

Or

- (b) Describe the following: (i) Nagpur road plan (ii) Indian Road Congress (iii) Central Road Research Institute (iv) Rural Road Development Plan: vision 2025. (16)
12. (a) (i) Describe the types of sight distance with neat sketch. (8)  
(ii) Explain PIEV theory with neat sketch. (8)
- Or
- (b) The highway has the following parameters: Design speed 70 *kmph*, Length of wheel base of largest truck 6 *m*, Pavement width 10.50 *m*, Length of horizontal circular curve radius 350 *m*. Design the following Geometric design. (i) Super elevation (ii) Extra widening of pavement (iii) Length of transition curve. (16)
13. (a) (i) Interpret the new flexible pavement for a two-lane undivided carriage way using the following data: Design CBR value of subgrade 5%, Initial traffic on completion of construction 300 *cv/day*, Average growth rate 6% /year, Design life 15 years and VDF value 2.5. (8)  
(ii) Discuss the equivalent single wheel load. (8)
- Or
- (b) Describe the IRC Recommendation for design procedure of rigid pavement. (16)
14. (a) (i) Illustrate the construction of WBM Road with neat sketch. (8)  
(ii) Write short notes on plastic road construction. (8)
- Or
- (b) (i) Illustrate construction of cement concrete road. (8)  
(ii) Explain the special consideration for construction of hilly road. (8)
15. (a) Explain any two common methods for the structural evaluation of flexible pavement. (16)
- Or
- (b) Integrate the types of pavement maintenance. (16)