

Reg. No. :

--	--	--	--	--	--	--	--	--	--

Question Paper Code: 31413

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

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. What is CRF? What is its present status?
2. List different institutions for highway planning, design and executions of roads?
3. Enumerate any four factors on which S.S.D depends.
4. Define equilibrium super elevation.
5. List the components of flexible pavement.
6. Classify stresses produced by temperature in a concrete pavement.
7. Discuss the importance of highway drainage?
8. Mention the type of joint filler material.
9. Where the interface treatment is necessary in bituminous road construction?
10. Name any four types of failures in rigid pavement.

PART - B (5 x 16 = 80 Marks)

11. (a) What are the different types of surveys to be carried out before commencing the new highway project and explain in detail. (16)

Or

- (b) Illustrate with neat sketches and explain, how obligatory points control a highway alignment. (16)
12. (a) Calculate the passing sight distance for a two way traffic highway for which the design speed is 100 km/h . The rate of acceleration of the fast moving vehicle may be assumed as 3.6 km/h/sec and the difference in speed between the overtaking vehicle and overtaken vehicle as 30 km/h . what will be the OSD, if only one way traffic is allowed. Draw a neat sketch of overtaking zone. (16)

Or

- (b) Calculate the length of transition curve for a design speed of 80 km/h at a horizontal curve of radius 250 m in a rural area. Assume suitable data. (16)
13. (a) Briefly outline the methodology suggested by IRC, for the design of rigid pavement. (16)

Or

- (b) Design the pavement which is located in hilly area. Present traffic intensity is 350 vehicles/day with a design period of 8 years and a traffic growth rate of 7.5%. Take lane distribution factor as 0.75; take vehicle damage factor as 2.5, design CBR value for soil sub-grade is 10%. (16)
14. (a) How will you find the CBR of a sub grade soil in a laboratory. Give a critical appraisal of the CBR method of design of flexible pavement. (16)

Or

- (b) Describe any two methods of construction of penetration macadam road. (16)
15. (a) Describe various methods of controlling reflection cracks in bituminous concrete roads. (16)

Or

- (b) Enumerate various steps involved in a highway project formulation and explain the contents in each step. (16)