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Question Paper Code: 44103

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2021

Fourth Semester

Civil Engineering

14UCE403 - HIGHWAY ENGINEERING

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

- The road foundation for modern highways construction, was developed by
 - tresguet
 - telford
 - macadam
 - telford and macadam simultaneously
- Border Roads Organisation for hilly regions, was formed in
 - 1947
 - 1954
 - 1958
 - 1960
- Width of vehicles affects the width of
 - lanes
 - shoulders
 - parking spaces
 - all the above
- The type of transition curves generally provided on hill roads, is
 - circular
 - cubic parabola
 - Lemniscate
 - spiral
- Design of flexible pavements is based on
 - mathematical analysis
 - empirical formulae
 - compromise of pure theory and pure empirical formula
 - none of these

(b) (i) Explain various types of surveys to be carried out before commencing the new highway project. (12)

(ii) State the objectives of highway research board. (4)

17. (a) Explain the points to be considered for planning of hair pin bends in hill roads. (16)

Or

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

18. (a) Explain the CBR method of pavement design. Discuss the limitations of this method. (16)

Or

(b) (i) Design the flexible pavement for the construction of a new highway with the following data:

(1) Category of road : four lane dual carriageway

(2) Number of commercial vehicles in the year : 5600 commercial vehicles completion of construction per day per direction

(3) Annual growth rate of commercial vehicles : 8%

(4) Design life : 15 years

(5) Design CBR of sub-grade soil : 5% (8)

(ii) Compare rigid and flexible pavements. (8)

19. (a) Explain the various tests conducted on bitumen. (16)

Or

(b) (i) Explain the various sub surface drainage system with neat sketches. (8)

(ii) Explain the construction procedure of cement concrete road as per IRC specification. (8)

20. (a) Explain the various surface defects in flexible pavements. Also mention their causes. (16)

Or

(b) Discuss the various steps in highway project formulation. (16)

