6E6035

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B. Tech. VI-Sem. (Main/Back) Exam., April/May-2016

Civil Engineering

6CE5A Transportation Engineering-I

Time: 3 Hours **Maximum Marks: 80**

Min. Passing Marks (Main & Back): 26

Instructions to Candidates:-

*Attempt any **five questions,** selecting **one question** from **each unit**. All Questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly.*

Units of quantities used/ calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

UNIT-I

Q.1 (a) Discuss the role of transportation in national development. [6]

(b) What are the significant recommendations of Jayakar Committee Report? How this helped in road development in India. [10]

OR

Q.1 (a) Compare road transportation with other modes of transportation. [6]

(b) Determine the lengths of different categories of roads in a state in India by the year 2018 using the 3rd road development formula and with the following data.[10]

Area of state: 18000 sq.km.

Number of towns: 25

Road Density: 83 km/ 100 km^2.

UNIT-II

Q.2 (a) List and explain the properties and requirements of road aggregates. Also mention the various tests conducted for judging the suitability of road aggregates. [8]

(b) Explain briefly the construction of earth roads. Discuss the advantages and limitations of earth roads. [8]

OR

Q.2 (a) List different types of cutbacks. When are these used? Discuss in brief the tests carried out on cutback bitumen? [10]

(b) Briefly list the methods of construction of gravel roads. [6]

UNIT-III

Q.3 (a) What is Super elevation? Explain the steps for practical design of super elevation. [8]

(b) Calculate the length of transition curve for a plain and rolling terrain for the following data: Design speed = 80 kmph., Radius of curve = 250 m, Road width = 70 m, Maximum allowable rate of super elevation 1 in 150, Super elevation maximum restricted to 0.07. Assume pavement is rotated with respect to centerline. [8]

OR

Q.3 (a) Define SSD. Explain any one factor that restricts the SSD. [6]

(b) A valley curve is formed by a descending gradient of 1 in 25 meeting an ascending gradient of 1 in 30. Design the total length of valley curve, if the design speed is 100 kmph so as to fulfill comfort conditions and head light sight distance for night driving assuming suitable details. [10]

UNIT-IV

Q.4 (a) Indicate how the traffic volume data are presented and the results used in traffic engineering. [8]

(b) What are the various objects and applications of spot – speed studies? [8]

OR

Q.4 (a) Write short note on :- [4×2=8]

(i) Thirteenth highest hourly traffic volume.

(ii) PCU

(iii) Road Markings.

(iv) Traffic Signal System

(b) Explain origin and destination study. What are the various uses of O & D studies. [8]

UNIT-V

Q.5 (a) Explain "Flexible and Rigid" pavements and write the points of difference. [8]

(b) What are the special points to be considered in the alignment of hill road? Discuss. [8]