4TH SEM./CIVIL/ 2022(S)

TH4 Highway Engineering

Full Marks: 80 Time- 3 Hrs

Answer any FIVE Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10

a. What is camber ?

b. Differentiate between bitumen and tar.

c. What are the objectives of highway planning.

d. Define traffic density?

e. What do you mean by seal coat ?

f. Define base course and wearing course.

g. What is highway alignment?

h. What is function of surface drainage and sub surface drainage?

i. Define transition curve?

j. Define WBM.

2. Answer **Any SIX** Questions 6 x 5

a. Calculate the safe stopping sight distance for design speed of 50kmph for
(i) Two way traffic on a two lane load (ii) Two way traffic on a single lane load. Assume coefficient of friction =0.35 & reaction time=2.5 second.

b. Write the objectives of providing transition curve in roads.

c. Explain the necessity of road drainage work.

d. Describe different types of bends in hill roads

e. Write short notes on CBR test.

f. Differentiate flexible and rigid pavement.

g Calculate the allowable speed on a horizontal curve of radius 180m. Assume the co-efficient of lateral friction as 0.15 and maximum super elevation of 1 in 15.

3 What is soil stabilization, briefly explain cement stabilization? 10

4 (a)What is highway drainage? 2

(b)Explain surface drainage and subsurface drainage systems in road. 8

5 Explain typical flexible pavement failures in detail. 10

6 Explain the total reaction time for a driver. 10

7 Write short notes on: 10
(a) Mud pumping.
(b) Super elevation
(c) National Highways
(b) Kerbs