Probable questions on highway engineering (TH4)

Chapter 1: introduction

2mark questions

1. Define
   a. National highways
   b. State highways

5mark questions

1. Explain briefly about the functions of Indian Roads Congress

2. Explain the functions of CRRI

10mark questions

1. Describe elaborately the IRC classification of roads.

Chapter 2: road geometrics

2mark questions

1. Define camber/cross slope
2. Define carriageway
3. Define median
4. What do you mean by kerb
5. Define shoulder
6. Define formation width
7. Define ROW
8. Define SSD
9. Define OSD
10. Define overtaking zone
11. Define super elevation
12. Define equilibrium super elevation
13. Define transition curves
14. Define gradient

5mark questions

1. Draw the cross-sectional profile of a road with a neat sketch and show the elements
2. Derive the formula for stopping sight distance
3. Explain PIEV theory
4. Calculate the minimum SSD required for a design speed of 50kmph. Assume coefficient of friction as 0.37 and reaction time of driver as 2.5 sec.
   a. For a two lane one way road
   b. For a two lane two way road
5. Calculate the minimum value of SSD required to avoid head-on collision of two cars approaching from opposite directions at 90kmph and 60 kmph. Assume a reaction time as 2.5secs, f as 0.35 and brake efficiency of 50% in both the cases.
6. Calculate the SSD required on a highway at a descending gradient of 2% for a design speed of 80 kmph. Assume any other data as per IRC.
7. Design the rate of super elevation for a horizontal highway curve of radius 500mn and design speed of 100kmph.
8. Design the rate of super elevation for a horizontal highway curve of radius 750mn and design speed of 110kmph.

10mark questions

1. The speeds of overtaking and overtaken vehicles are 70 and 40 kmph respectively on a two way traffic road. If the acceleration of overtaking vehicle is 0.99m/s^2 .then
   a. Calculate safe OSD
   b. Mention minimum length and desirable length of overtaking zone
   c. Draw a sketch of overtaking zone and show the positions of sign posts,.
2. Derive the formula for overtaking sight distance
3. Define camber? Explain the objectives of providing camber? Write the amount of camber provided for different types of roads

Chapter 3: road materials

2mark questions

1. Define CBR value
2. Define flakiness index
3. Define elongation index
4. Define LAV
5. Define angularity number

5mark questions

1. Explain the crushing strength test of aggregates
2. Explain the abrasion test of aggregates
3. Explain briefly the function of soil as a highway sub grade.

10mark questions

1. Explain the procedure of conducting CBR test with a neat sketch
2. Explain the soundness test and water absorption test of aggregates

Chapter 4: road pavements

2mark questions

1. Draw the cross-section of flexible and rigid pavement.

5mark questions

1. Differentiate between flexible pavements and rigid pavements
2. Explain the functions of various components of flexible pavement in brief
3. Explain the steps of sub grade preparation to receive pavement.

10mark questions

1. Describe elaborately the construction steps of a bituminous road.
2. Describe elaborately the construction steps of a cement concrete road
3. Define soil stabilization. Explain various methods of soil stabilization in brief

All the best

Chapter 5: hill roads

5mark questions

1. Explain
   a. Breast walls
   b. Retaining walls
2. Explain briefly about different types of bends in hill roads

Chapter 6: road drainage

5mark questions

1. Explain different methods of surface drainage
2. Explain different methods of subsurface drainage

Chapter 7: road maintenance

5mark questions

1. Briefly describe different types of failures in rigid pavement
2. Explain briefly about different types of traffic signals
3. Explain
   a. Patch repair
   b. Surface treatment
   c. resurfacing

10mark questions

1. Briefly describe different types of failures in flexible pavement and their maintenance procedures.

Chapter 8: construction equipments

5mark questions

1. Explain briefly about
   a. Road pavers and asphalt boilers
   b. Bulldozer
   c. Grader
   d. Scraper

All the best