4th Semester

Question Bank on Highway Engineering

2 Marks Questions

1. What is IRC ?
2. Define traffic Rotary.
3. What is Cutback bitumen
4. Name common binders.
5. Differentiate between Subgrade and subbase
6. What do you mean by Super elevation ?
7. What is OSD.
8. What do you mean by tack coat ?
9. What do you mean by highway alignment ?
10. Define Camber.
11. Define median of a Road.
12. Define Right of way
13. Name common binders for Roadwork
14. Name important transportation organization
15. Define cement Stabilization.
16. State necessity of highway planning.
17. State IRC specification for width of carriage way for various classes of Roads.
18. Compare between bitumen and tar.
19. Draw different type of general shape of transition Curve
20. what do you mean by soundness test
21. what are the function of IRC.
22. what is Super elevation.
23. what do you mean by Impact test.
24. what do you mean by CBR test.
25. Define Gradient.

(26) What is necessity of highway planning?

(27) Define OSD.

(28) List 4 mentions of Jayakar Committe.

(29) What is abrasion test.

(30) Define Subgrade and subbase.

(31) Define flexible pavement.

(32) Define Rigid Pavemnt.

(33) What is cement stabilization.

(34) Mention 2 function of CRRI.

(35) Define fly ash stabilization.

5 Marks Question

(1) Define Camber. What are the objectives of providing Camber? Specify the recommended ranges of Camber for different types of pavement surface.

(2) Explain PIEV theory

(3) Discuss the significant recommendation of Jayakar committe report.

(4) Calculate SSD for a design speed of 60kmph for
(i) 2 way traffic on a two lane road.
(ii) 2 way traffic on a single lane road
Assume coefficient of friction 0.4 and rxn time of driver as 3sec.

(5) Describe Los angles abrasion test for road aggregates and explain its significance

(6) Discuss CBR test.

(7) Describe rate of Superelevation for a horizontal highway curve of radius 450m and speed 110kmph

(8) Calculate the SSD for a design speed of 110 kmph. Take total reaction time 2.5 seconds.

(9) What are significant recommendation of Jayakar committe and how did this help in road development

(10) What is OSD? Derive an expression for calculation of OSD on a highway.

(11) What is SSD? Derive an expression for calculation of SSD on a highway

(12) What is flakiness index of road aggregate? What is its significance.

(13) Draw a typical cross-section of rigid pavement road and mention the layers of road from the base.

(14) Explain in detail lime stabilization.

(15) Describe following test on aggregates. (a) water absorption test (b) crushing strength test (c) Impact test.

(16) Define Gradient. Describe different type of gradients.

(17) Discuss the function of various pavement components.

(18) Calculate the min non passing sight distance on a highway at a descending gradient of 6%. Given the following data

(a) Design speed = 80 kmph

(b) Reaction time = 2.5 sec.

(c) coefficient of friction = 0.4.

(19) Explain CBR test in details.

(20) Design the rate of superelevation for a hz highway curve radius 750 m and speed 110 kmph.

7 Marks Question

(1) Design the rate of Super-elevation for a horizontal highway curve of radius 450m and speed 90Kmph. Assume all other data.

(2) The speed of overtaking and overtaken vehicles are 70 & 40kmph respectively on a 2 way traffic road. If the acceleration of overtaking vehicle is 0.99 m/sec². Assume all other data.
(i) Calculte safe overtaking distance.
(ii) Mention the min length of overtaking zone.

(3) Derive an expression for calculating OSD on a highway.

(4) Calacte the total widening on hz curve for a state highway. Given following data (i) Design speed of highway = 60Kmph.
(ii) Pavement width = 7m, (iii) Length of wheel base = 7.0m
(iv) Radius of hz curve = Ruling min radius.
Assume any other data.

(5) Briefly explain the causes of failure of pavement.

(6) Explain PIEV theory and state how it explains reaction time.

(7) Define Superelevation. Design Super elevation reqd. at a hz curve of radius 250m for design Speed of 100kmh. Should there be restriction in speed

(8) (i) what is Superelevation ? (ii) A highway is provided with a hz curve of radius 300m in certain locality. Calculate the Superelation need reqd to maintain the design speed of 90km/hr. Take coefficient of friction = 0.15.

(9) Calculate the SSD on a highway at a descending gradient of 2.35% for a design speed of 65kmph. Assume all other data as per IRC.

(10) Explain briefly CBR test with neat sketch.

(11) write short notes on (a) Mech. stabilization
(b) Lime stabilization
(c) Cement stabilization
(d) Fly ash stabilization.

(12) what do you mean by SSD ? Also give detailed analysis.

(13) Compare between Bitumen and Tar

(14) what do you mean by passing sight distance ? Also give a detailed analysis.

(15) with neat sketch, describe methods of provision of Superelevation

(16) Describe Bituminous Macadam