Time : 3 Hours   Max Marks : 100

PART –A   10 x 2 = 20 Marks)

1) What are the objectives of the Indian Roads Congress?
2) What are obligatory points?
3) Why is a Camber provided on a roadway?
4) Draw the types of transition curve
5) Explain PIEV theory.
6) What is Standard and Legal axle loads as per IRC?
7) Discuss any three differences between Tar and Bitumen.
8) How is the grading of bitumen done?
9) Why are Dowel bars provided in concrete pavement.
10) List the different types of bituminous material used in road constructions.

PART – B   (5 x 16 = 80 Marks)

11 a. Explain the cross sectional elements of a highway with neat diagrams.   (16)

12 a.i. Derive an expression for Over taking Sight Distance.   (8)

   ii. Calculate the absolute minimum sight distance required to avoid a head on collision of two cars approaching from the opposite directions at 85km/hr and 75km/hr. Assume a reaction time of 2.5sec, coefficient of friction of 0.85.   (8)

(OR)

12 b. Design the Flexible Pavement for the construction of new highway with the following data: No of commercial vehicles as per last count = 1200 CV; Period of construction = 4 years; Design CBR of Subgrade soil = 10%; Category of road = NH, 4 lane single carriageway; Design life 15 years. Assume suitable data   (16)

13.a. Explain the concept of Off-tracking and method of widening on curves and ESWL   (16)

(OR)

13 b.i Explain the procedure for the CBR testing of subgrade soil.   (8)
   ii. Discuss the Vehicle Damage Factor and Lane Distribution Factor.   (8)

14 a. Discuss the test procedures of Aggregate Impact Value and Ductility value.   (16)

(OR)

14 b. Discuss any three failures each for Flexible and Rigid Pavements.   (16)

15 a. Discuss the construction of Water Bound Macadam Road.   (16)

(OR)

15 b. Explain Pavement Serviceability Index and discuss the Benkelman Beam Test.   (16)