21222

3 Hours / 70 Marks   Seat No.

15 minutes extra for each hour

Instructions :   (1)   All Questions are *compulsory.*

(2)   Illustrate your answers with neat sketches wherever necessary.

(3)   Figures to the right indicate full marks.

(4)   Assume suitable data, if necessary.

(5)   Use of Non-programmable Electronic Pocket Calculator is permissible.

Marks

1.   **Attempt any FIVE :**   **5 × 2 = 10**

(a)   List the types of road according to third road development plan.

(b)   List any two characteristics of road transport.

(c)   State the requirement of ideal alignment.

(d)   Define : (i) PCU, (ii) Traffic density.

(e)   Enlist types of traffic island.

(f)   State the objective of providing retaining wall in hill road.

(g)   Define Highway drainage.

2.   **Attempt any THREE :**   **3 × 4 = 12**

(a)   Explain the importance of providing camber. Give its types.

(b)   Define Gradient and enlist types of gradient to be provided in road.

(c) State the object of providing superelevation. Also state the maximum and minimum value of superelevation.

(d) Explain the functions of component parts of a typical pavement.

3. Attempt any THREE : **3 × 4 = 12**

(a) State the objective of providing

(i) Prime coat (ii) Tack coat

(b) Draw neat sketch of penetrometer used in bitumen testing.

(c) Describe in brief purpose of conducting traffic volume study.

(d) Draw neat sketch of general layout of hill road drainage system.

4. Attempt any THREE : **3 × 4 = 12**

(a) Discuss the stages in fixing the alignment of hill road.

(b) Discuss the different precautionary measures to be adopted to avoid land slides.

(c) Describe the significance of drainage in highway.

(d) Draw neat sketch of subsurface drainage system with transverse drainage.

(e) Discuss the method to repair the pot hole in bituminous road.

5. Attempt any TWO : **2 × 6 = 12**

(a) Draw labelled typical cross-section of National Highway in embankment.

(b) Calculate the safe stopping distance for design speed 80 kmph for two way traffic on two lane road. Assume coefficient of friction 0.35 and reaction time of driver 2.5 seconds.

(c) Describe in brief with neat sketch joints in cement concrete road.

6. Attempt any TWO : **2 × 6 = 12**

(a) Explain in brief construction procedure of WBM road with neat sketch.

(b) State various objectives of accident studies and state four basic elements involved in traffic accident.

(c) Draw following traffic signs :

(i) One way   (ii) Speed limit

(iii) Give way   (iv) Hair pin bend left

(v) Compulsory turn left   (vi) Narrow bridge

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