11920

3 Hours / 70 Marks   Seat No. ☐☐☐☐☐☐☐☐

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

(2)   Answer each next main Question on a new page.

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

(4)   Figures to the right indicate full marks.

(5)   Assume suitable data, if necessary.

Marks

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

(a)   State any four modes of Transportation.

(b)   Classify the roads according to Nagpur Road Development plan.

(c)   State any two requirements of a Ideal road alignment.

(d)   Define traffic volume and traffic density.

(e)   Enlist any four types of Traffic Island.

(f)   State any two causes of Landslides.

(g)   State the types of drainage system.

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

(a)   Define gradient and state any four types of gradient.

(b)   Define :

(i)   Stopping Sight Distance

(ii)   Overtaking Sight Distance

(c)   Draw a neat sketch of std. C/s of National Highway in embankment.

(d)   State any two merits and demerits of WBM road.

3. **Solve any THREE :** 3 × 4 = 12

(a) Write the procedure of construction of cement concrete pavement showing it's components.

(b) Draw C/S of typical flexible pavement & label it's components.

(c) Draw road sign for,

 (i) Load limit

 (ii) Keep left

 (iii) Right hand curve

 (iv) Hospital

(d) State the difference between alignment of hill roads and alignment of plain roads.

4. **Solve any THREE :** 3 × 4 = 12

(a) State any four preventive measures of Landslides in hilly roads.

(b) Draw labelled sketches of side drains along hill roads.

(c) State any four causes of failure of rigid pavement.

(d) Prepare a chart showing schedule of maintenance operation from October to March for bituminous road.

(e) Justify the remedial measures for the following defects in earthen road :

 (i) Formation of dust during dry weather

 (ii) Growth of vegetation inside drains & their silting up.

5. **Solve any TWO :** 2 × 6 = 12

(a) Enlist three types of curves provided on hill roads. Draw neat sketch of them.

(b) Calculate the design speed of a vehicle on a horizontal curve having radius of 100 m. with permissible super elevation of 7%. Consider Coeff. of friction 0.18.

(c) State the requirement of good quality material which plays the major role in highway construction.

6. **Solve any TWO :** **2 × 6 = 12**

   (a) Write the procedure of construction of WBM road with neat sketch showing various components.

   (b) Explain the Divisional Island with neat sketch.

   (c) Draw the Collision diagram for,

   (i) Head on Collision

   (ii) Rear end Collision

   (iii) Side Sweep

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