

313323

25226

3 Hours / 70 Marks

Seat No.

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- 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.
 - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following :

5 × 2 = 10

- (a) Classify the road according to Nagpur Road Plan.
- (b) Define Road alignment.
- (c) Enlist any four desirable properties of subgrade soil.
- (d) Define Passenger Car Unit (PCU).
- (e) State four reasons of Road maintenance.
- (f) State any four characteristics of Road transport.
- (g) Define :
 - (i) Right of way
 - (ii) Kerb



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

- (a) Enlist the different modes of transportation. State advantages & disadvantages of any one mode of transportation.
- (b) State the objectives of Geometrical design of highways.
- (c) Draw neat and labelled c/s of a National Highway in cutting showing its components.
- (d) Define Camber. State the purpose of providing camber.

3. Attempt any THREE of the following :**3 × 4 = 12**

- (a) Explain Gradient and state the IRC specification of gradient for different terrains.
- (b) Enlist different material used in pavements. State any four properties of bitumen used for road construction.
- (c) Describe CBR test on soil in detail with a neat labelled sketch.
- (d) Draw the c/s of a typical hill road and label any four components of it.

4. Attempt any THREE of the following :**3 × 4 = 12**

- (a) Differentiate between flexible pavement and rigid pavement (any eight points).
- (b) State requirements of a good drainage system for National Highways.
- (c) Draw neat labelled c/s of road showing its surface drainage system.
- (d) State the common devices used to control and regulate traffic and state at least one use of each.
- (e) State and explain various failures in Rigid Pavement (any four).

5. Attempt any TWO of the following :**2 × 6 = 12**

- (a) The radius of horizontal curve is 100 m. The design speed is 60 kmph. The co-efficient of lateral friction is 0.15.
 - (i) Calculate super-elevation if full friction is assumed to be developed.
 - (ii) Calculate co-efficient of friction if no super-elevation is provided on curve.
- (b) Calculate Stopping Sight Distance (SSD) for two way traffic in a single lane road. The design speed of road is 60 kmph. Assume reaction time of driver as 2.5 sec. and co-efficient of friction = 0.6 and take Brake efficiency 50%.
- (c) Explain the term design speed stating the important factors affecting it. What are design speed for NH and MDR specified by IRC ?

6. Attempt any TWO of the following :**2 × 6 = 12**

- (a) Describe construction procedure of WBM road with neat sketch.
 - (b) Draw traffic signs for the following :
 - (i) Speed limit
 - (ii) No parking
 - (iii) Right turn prohibited
 - (iv) No entry
 - (v) STOP
 - (vi) Narrow bridge
 - (c) State the various causes of landslides in hilly areas. Explain the methods to prevent it.
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