

22403

21222

3 Hours / 70 Marks

Seat No.

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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.

Marks

1. Attempt any FIVE of the following :

10

- (a) List out any four zones of Indian Railway.
- (b) Define rail guage.
- (c) Define points and crossings.
- (d) List out the tools required for the track maintenance.
- (e) List the types of Culvert.
- (f) Define equilibrium cant.
- (g) Define lining of tunnel.

2. Attempt any THREE of the following :

12

- (a) State the role of transportation in the development of nation.
- (b) Explain any two causes of creep of Rail with a neat sketch.
- (c) State the various factors affecting selection of site of a bridge.
- (d) Define ballast and mention any three functions of ballast.

- 3. Attempt any THREE of the following : 12**
- (a) State the requirements of good pier.
 - (b) Discuss any two types of foundation provided for R.C.C. bridges.
 - (c) Draw the sketches of Rocker bearing and Knuckle bearings used in bridges.
 - (d) Define the terms :
 - (i) Effective span
 - (ii) Clear span
 - (iii) Economic span
 - (iv) Afflux
- 4. Attempt any THREE of the following : 12**
- (a) State any four advantages and disadvantages of prestressed bridges.
 - (b) Compare Temporary and Permanent Bridges. Write any 4 points.
 - (c) Explain the following :
 - (i) Drills
 - (ii) Drills carrying equipment
 - (d) Draw a labelled sketch of L-section of bridge showing its components.
 - (e) List different points to be observed for inspection of bridge.
- 5. Attempt any TWO of the following : 12**
- (a) Discuss wayside stations, junctions station and terminal station.
 - (b) Draw a neat sketch of standard cross-section of double B.G. Track in cutting.
 - (c) State steps involved in the construction of Railway Track.
- 6. Attempt any TWO of the following : 12**
- (a) Describe Heading and Bench method of tunnelling in hard rock, with neat sketch.
 - (b) Sketch various types of tunnel cross-sections. State under what conditions each is adopted.
 - (c) Explain Tunnel Surveying and 3 steps involved in Tunnel surveying.
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