

17418

15116

3 Hours / 100 Marks

Seat No.

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- 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.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. a) **Attempt any SIX of the following:** **12**
- (i) Enlist any four modes of transportation.
 - (ii) Define gauge of railway track.
 - (iii) List the types of bridges as per alignment.
 - (iv) Define Tunnel
 - (v) List any four types of sleepers.
 - (vi) Define HFL and freeboard related to bridge.
 - (vii) State any four types of tunnels as per shapes.
 - (viii) Define Tunnel surveying.

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Marks

- b) **Attempt any TWO of the following:** **8**
- (i) Draw a neat labelled cross section of single line B. G. railway track in embankment.
 - (ii) What are the informations required to be collected for design data of bridges?
 - (iii) Enlist any four purposes of tunnel.
2. **Attempt any FOUR of the following:** **16**
- a) State any four characteristics of road transportation.
 - b) Mention the ideal requirements of rail joints.
 - c) What are the causes of creep of rail?
 - d) Sketch any two types of steel truss bridges and give their suitability.
 - e) State and explain two situations where causeways are provided.
 - f) What is the necessity of ventilation in tunnel and state methods of ventilation.
3. **Attempt any TWO of the following:** **16**
- a) List various types of foundation of bridges and explain any two types of foundation provided for RCC bridge.
 - b) Draw a neat sketch of plan and longitudinal section of bridge and show component parts of it.
 - c) List various methods of tunnelling and explain any one with sketch.
4. **Attempt any TWO of the following:** **16**
- a) Classify the tunnels according to their functions.
 - b) Explain with sketch method of transferring the centre line from the ground inside the tunnel.
 - c) Explain the duties of permanent way inspector.

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Marks**5. Attempt any FOUR of the following:****16**

- a) State the types of track maintenance.
- b) Explain with neat sketch the functioning of hump yards.
- c) Define wing wall and list different types of wing walls.
- d) List any eight factors needed for selection of ideal site for bridge.
- e) State the factors on which shape and size of tunnel depend.
- f) Enlist different steps followed in tunnelling in hard rock method.

6. Attempt any FOUR of the following:**16**

- a) List any four points for inspection of bridge substructure and superstructure.
- b) Explain with sketch roller rocker bearing.
- c) Draw the cross sections of double headed and bull headed rail.
- d) State the requirements of ideal sleepers.
- e) Mention where the following types of ballast are suitable on rail track.
 - (i) Gravel
 - (ii) Cinder
 - (iii) Brick
 - (iv) Earth
- f) List and draw dog spike and screw spike in railways.