

314312

24225

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 : 10
- a) List two merits of Roadways over Railways.
  - b) List out any four zones of Indian Railways.
  - c) Define rail gauge.
  - d) Define ruling gradient and superelevation.
  - e) State the classification of bridges according to span.
  - f) Define :
    - i) Abutment
    - ii) Wing wall
  - g) List the types of culvert.

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- 2. Attempt any THREE of the following :** **12**
- a) State the ideal requirement of railway track.
  - b) State the functions of ballast in the railway track.
  - c) Draw a neat labelled sketch of single line broadgauge in embankment.
  - d) Describe Cant deficiency and its values prescribed by Indian Railways for B.G. M.G. and N.G.
- 3. Attempt any THREE of the following :** **12**
- a) State main requirements of Goods yard.
  - b) State classification of tunnel according to purpose.
  - c) State necessity of providing tunnel shaft.
  - d) Describe the Needle-beam method of tunneling in soft rock with neat sketch.
- 4. Attempt any THREE of the following :** **12**
- a) Compare wooden sleeper and concrete sleeper on the basis of the following points :
    - i) Initial cost
    - ii) Handling
    - iii) Durability
    - iv) Fire resistance.
  - b) State the duties of permanent way inspector.
  - c) Explain fore-poling method of tunneling in soft rock with neat sketch.
  - d) Describe Drift method of tunnelling in hard rock with neat sketch.
  - e) State the purpose of maintenance of tunnel.

**5. Attempt any TWO of the following :****12**

- a) Explain the function of any six tools required for the maintenance of railway track.
- b) Draw neat labelled sketches of :
  - i) Scissors cross over
  - ii) Diamond crossing
  - iii) Track Triangle
- c) State the six advantages of prestressed concrete bridges.

**6. Attempt any TWO of the following :****12**

- a) Differentiate between temporary and permanent bridges.
  - b) State the functions of Piers and requirement of good pier.
  - c) Describe drainage of tunnels with neat sketches.
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