

314312

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 :** **10**
- a) List two merits of Roadways over Railways.
 - b) State various types of rail gauges.
 - c) State four functions of Ballast.
 - d) Define
 - i) Cant deficiency
 - ii) Negative cant.
 - e) Give any two functions of wing wall.
 - f) List the types of culvert.
 - g) State the necessity of temporary bridge.

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- 2. Attempt any THREE of the following : 12**
- a) Describe the ideal requirement of permanent way.
 - b) Explain the functions of rail fixtures and fastenings.
 - c) Explain any four factors governing rail alignment.
 - d) Explain the daily and periodic maintenance of rail track.
- 3. Attempt any THREE of the following : 12**
- a) Explain any two types of railway station with neat sketch.
 - b) Classify the tunnels as per their purpose and alignment.
 - c) Describe survey work required for proposed tunnel construction work.
 - d) Explain in brief with neat sketch construction of Tunnel with needle beam method.
- 4. Attempt any THREE of the following : 12**
- a) Explain the causes and preventive measures of Creep.
 - b) Draw neat labelled sketches of:
 - i) Scissors cross over
 - ii) Diamond crossing
 - iii) Triangle
 - iv) Crossover
 - c) Draw the cross sections of following shapes of tunnels and state their suitability:
 - i) Segmental shape tunnel
 - ii) Egg shape tunnel
 - d) Mention advantages and disadvantages of Drift method of tunnelling.
 - e) Differentiate between tunnelling in hard and soft rock.

5. Attempt any TWO of the following : 12

- a) Explain the coning of wheel and of tilting of Rail with neat sketch.
- b) Explain four types of railway yards stating its functions.
- c) Draw a neat labelled sketch (plan & section) of bridge showing all it's components.

6. Attempt any TWO of the following : 12

- a) Draw labelled sketches of the following:
 - i) Abutment with straight wing walls.
 - ii) Abutment with splayed wing walls.
 - iii) Abutment with Return wing walls.
 - b) Explain any two types of Bridge maintenance jobs.
 - c) Explain Tunnel ventilation using Mechanical method with suitable sketch.
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