

17418

21415

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) 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) State role of transportation in development of India.
 - (ii) Enlist necessity of cross drainage works.
 - (iii) Compare demerits of roadway and railway.
 - (iv) Explain coning of wheels.
 - (v) State factors affecting selection of site for railway station.
 - (vi) State functions of wing wall and abutment.
 - (vii) State component parts of substructure and superstructure.
 - (viii) State merits and demerits of tunnels.
- b) Attempt any TWO of the following: 8
- (i) State causes and effects of creep of rail.
 - (ii) Explain with sketch, effective span, clear span, economical span and waterway of bridge.
 - (iii) Explain high level causeway with sketch.

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Marks

- 2. Attempt any FOUR of the following:** **16**
- a) State various types of keys in rail joint. Explain Stuart's Key with sketch.
 - b) Explain functions of Marshalling yard with sketch.
 - c) State various types of track maintenance and explain special maintenance.
 - d) State types of investigating survey conducted for bridge construction. Explain geological survey.
 - e) Differentiate between open and solid floors with sketch.
 - f) Explain stiffened suspension bridge.
- 3. Attempt any TWO of the following:** **16**
- a) What is difference between fish plate and bearing plate? Draw labelled sketches of fish plate and bearing plate.
 - b) Explain four types of gradient with sketches.
 - c) Explain cant deficiency and negative cant with sketch.
- 4. Attempt any TWO of the following:** **16**
- a) Explain various data required for design of bridge.
 - b) What is bearing? State requirements and types of bearing. Explain any one bearing with sketch.
 - c) Define piers. State function, requirements and types of piers.
- 5. Attempt any TWO of the following:** **16**
- a) Explain the process of transforming the alignment to inside of tunnel with sketch.
 - b) Explain needle beam method of constructing tunnel w.r.t. construction steps, sketch, merits and demerits.
 - c) State methods of tunnelling in hard rock. Explain drift method with sketch.

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Marks

6. Attempt any FOUR of the following:

16

- a) What do you mean by timber trestle? Draw sketch of three legged timber trestle.
 - b) Explain hydrological investigation of railway.
 - c) Explain mucking process of construction of shafts.
 - d) Draw cross section of tunnel for single track lane for Broad Gauge.
 - e) State detailed classification of tunnels.
 - f) State objects and methods of tunnel ventilation.
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