

22403

23124

3 Hours / 70 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.
 - (6) Preferably, write answers in sequential order.

Marks

1. Attempt any FIVE of the following :

10

- (a) Write two merits of waterways.
- (b) Define rail guage.
- (c) Define (i) Cant deficiency (ii) Negative cant.
- (d) Give two purposes of station yard.
- (e) State the necessity of temporary bridge.
- (f) List out the tools required for the track maintenance.
- (g) State the necessity of tunnel construction.

2. Attempt any THREE of the following :

12

- (a) Explain the functions of rail fixtures and fastenings.
- (b) Draw a neat labelled sketch of permanent way in embankment.



- (c) State any four factors affecting selection of site of a bridge.
- (d) Discuss the ideal requirements of the sleepers.

3. Attempt any THREE of the following :

12

- (a) Explain the functions of bridge bearing.
- (b) Discuss fixed bearing and expansion bearing with their suitability.
- (c) Draw a neat labelled sketch of plan of bridge showing all its components.
- (d) Define the following terms :
 - (i) Free board
 - (ii) Economic span
 - (iii) Scouring
 - (iv) Afflux

4. Attempt any THREE of the following :

12

- (a) Explain Pre-monsoon inspection of a bridge.
- (b) Compare permanent and temporary bridges with respect to following points :
 - (i) Initial cost
 - (ii) Construction
 - (iii) Load carrying capacity
 - (iv) Suitability to traffic
- (c) Explain with sketch drift method of tunnel excavation in hard rock.
- (d) Draw labelled sketches of the following :
 - (i) Abutment with straight wing walls.
 - (ii) Abutment with splayed wing walls.
- (e) Describe high level and low level causeways.

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

- (a) Explain coning of wheels with neat sketch.
- (b) Explain the daily and periodic maintenance of rail track.
- (c) Draw neat labelled sketches of :
 - (i) Scissors cross over
 - (ii) Diamond crossing
 - (iii) Triangle

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

- (a) State the purposes of providing tunnel lining and state types of lining.
 - (b) Draw the cross sections of following shapes of tunnels and state their suitability :
 - (i) Rectangular shape tunnel
 - (ii) Segmental shape tunnel
 - (iii) Egg shape tunnel
 - (c) Describe with sketches drainage of tunnels.
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