

17418

11819

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 Electronics 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 nation.
 - (ii) Differentiate roadways and railways.
 - (iii) State necessity of cross-drainage works for railways.
 - (iv) Define point and crossing.
 - (v) Write any two requirement of a railway station.
 - (vi) Define afflux and scour.
 - (vii) Write any two functions of wingwall.
 - (viii) Define tunnel.
- b) **Attempt any TWO of the following:** **8**
- (i) Define railguage. Describe any three factors that affect the selection of railguage.
 - (ii) Explain Cut-water and Ease-water with a labelled sketch.
 - (iii) Draw a labelled sketch of a suspension bridge.

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- 2. Attempt any FOUR of the following:** **16**
- a) Write any two functions of rails. Draw a neat labelled sketch of flat footed rail showing all dimensions.
 - b) Write any four requirements of a locomotive yard.
 - c) Write objectives and necessity of track maintenance.
 - d) Describe any four factors that affect the selection of site of a bridge.
 - e) Write any four functions of bearings.
 - f) Give meaning of permanent bridge. Explain slab culvert with a neat sketch.
- 3. Attempt any TWO of the following:** **16**
- a) Define creep of rail. Explain causes and prevention of creep.
 - b) Explain cant deficiency and negative cant with a neat sketch.
 - c) Draw line sketches of layout of scissor crossover and diamond crossing.
- 4. Attempt any TWO of the following:** **16**
- a) Draw a typical plan of bridge showing all important component parts. Also define the following terms:
 - (i) Effective span
 - (ii) Afflux
 - (iii) Water way
 - (iv) Wing wall
 - b) Classify bridge according to function, material, span and alignment.
 - c) Define pier. State function, requirements and types of pier.

- 5. Attempt any TWO of the following:** **16**
- a) Classify tunnels according to shape and size, position of alignment, materials and purposes with suitable sketches.
 - b) State any four objectives of tunnel ventilation. Explain mechanical method of tunnel ventilation.
 - c) Describe heading and bench method of tunneling in hard rock with a neat labelled sketch.
- 6. Attempt any FOUR of the following:** **16**
- a) Write any four general points to be observed while inspecting a bridge.
 - b) Draw cross section of tunnel for a double line Broad gauge railway track.
 - c) State advantages and disadvantages of tunnel.
 - d) State the precautions to be taken during construction of tunnels.
 - e) Define tunnel surveying. State various operations involved in tunnel surveying.
 - f) Define tunnel alignment. Describe various factors that controls tunnel alignment.
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