

17418

15162

3 Hours / 100 Marks

Seat No.

--	--	--	--	--	--	--	--	--	--

- Instructions* – (1) All Questions are *Compulsory*.
- (2) Illustrate your answer with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data, if necessary.
- (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 two merits and two demerits of Roadway.
- (ii) State the role of transportation in national development.
- (iii) State the necessity of cross drainage works for road.
- (iv) Define “Gradient”? State the types of gradient.
- (v) Enlist the types of Marshalling yard.
- (vi) Define the term - HFL and freeboard.
- (vii) Define the term - Effective span and clear span.
- (viii) State any four function on which shape and size of tunnel depends.

P.T.O.

- b) **Attempt any TWO of the following:** **8**
- (i) Define “Gauge of Railway track”. State the factors governing selection of gauge.
 - (ii) Draw the L-section and c/s of pier and explain the terms pier height, width, batter, length, cap, Cut-water and Ease-water.
 - (iii) Draw a labelled sketch of cantilever bridge.
- 2. Attempt any FOUR of the following:** **16**
- a) Define ‘Alignment’. State the factors governing rail alignment.
 - b) What are the requirements of railway station?
 - c) Explain water column with neat sketch.
 - d) Explain the factors controlling selection of ideal site for bridge.
 - e) Explain the term - Afflux, scouring.
 - f) What is culvert? Explain slab culvert with neat sketch.
- 3. Attempt any TWO of the following:** **16**
- a) Draw a neat labelled cross-section of double line BG track in embankment.
 - b) What is coning of wheel? Explain behaviour of coned wheel on curved path.
 - c) Draw a neat line sketch of scissor cross over, - Diamond crossing.
- 4. Attempt any TWO of the following:** **16**
- a) Classify the bridges according to function, material, span length and alignment.
 - b) Draw a neat sketch of plan and L-section of bridge? Show component parts their on.
 - c) Explain Rocher-Roller bearing with neat sketch.

- 5. Attempt any TWO of the following:** **16**
- a) Explain the method of transferring the centre line from the ground through a shaft.
 - b) What is ventilation of tunnel? State the necessity of it. Explain mechanical method of tunnel ventilation.
 - c) State any three advantages - disadvantages - suitability of needle beam method of tunneling.
- 6. Attempt any FOUR of the following:** **16**
- a) Explain the four points which should be inspected in bridge substructure and bridge superstructure.
 - b) State the necessity of shaft in tunnel.
 - c) Classify the tunnels according to shapes. Draw line sketches of them. State suitability of any four types according to shape.
 - d) State the advantages and disadvantages of tunnel.
 - e) Define lining of tunnel? State its various types.
 - f) State the types of Drift? Explain with sketch centre drift method in hardrock.
-