

22403

21819

3 Hours / 70 Marks

Seat No.

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

- 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) Assume suitable data, if necessary.
- (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) Write two merits of roadways over railways.
- b) List the types of rail gauge.
- c) Define cant deficiency and negative cant.
- d) Give two purpose of station yard.
- e) Write the necessity of temporary bridge.
- f) List out the components of left hand turnout.
- g) Classify tunnels based on its purpose.

P.T.O.

2. **Attempt any THREE of the following:** **12**
- a) Write the ideal requirements of permanent way.
 - b) Explain the functions of ballast.
 - c) Classify the bridges based on:
 - (i) Span of bridge
 - (ii) Purpose of bridge.
 - d) Discuss the factors affecting selection of rail gauge.
3. **Attempt any THREE of the following:** **12**
- a) Describe the factors affecting site selection for construction of bridge.
 - b) Define the following:
 - (i) Economic span
 - (ii) Afflux
 - (iii) Scour depth
 - (iv) Freeboard
 - c) Explain the functions of following component parts of a bridge:
 - (i) Pier
 - (ii) Abutment
 - (iii) Bearing
 - (iv) Wing wall.
 - d) Write the functions of bridge bearing. Also write its types.

- 4. Attempt any THREE of the following:** **12**
- a) Write two advantages and two disadvantages of pre-stressed bridge.
 - b) Explain the sequential steps involved in bridge construction.
 - c) Describe fore-poling method of tunneling in soft rock.
 - d) Draw the labelled sketches of the following:
 - (i) Splayed wing wall.
 - (ii) Return wing wall.
 - e) Give the points to be observed during pre-monsoon and post monsoon inspection.
- 5. Attempt any TWO of the following:** **12**
- a) Explain the causes of creep of rail. Suggest preventive measures against it.
 - b) Explain the necessity of tilting of rail with neat sketch.
 - c) Explain the duties of following personnels in rail track maintenance.:
 - (i) Permanent way inspector
 - (ii) Gang mate
 - (iii) Key man.
- 6. Attempt any TWO of the following:** **12**
- a) Describe the survey work required for proposed tunnel construction work.
 - b) Discuss the purposes of tunnel lining.
 - c) Explain the tunnel ventilation using mechanical method.
-