17418

15116

3 Hours / 100 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) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) 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) Enlist any four modes of transportation.

(ii) Define gauge of railway track.

(iii) List the types of bridges as per alignment.

(iv) Define Tunnel

(v) List any four types of sleepers.

(vi) Define HFL and freeboard related to bridge.

(vii) State any four types of tunnels as per shapes.

(viii) Define Tunnel surveying.

Marks

b) **Attempt any TWO of the following:** **8**

(i) Draw a neat labelled cross section of single line B. G. railway track in embankment.

(ii) What are the informations required to be collected for design data of bridges?

(iii) Enlist any four purposes of tunnel.

2. Attempt any FOUR of the following: **16**

a) State any four characteristics of road transportation.

b) Mention the ideal requirements of rail joints.

c) What are the causes of creep of rail?

d) Sketch any two types of steel truss bridges and give their suitability.

e) State and explain two situations where causeways are provided.

f) What is the necessity of ventilation in tunnel and state methods of ventilation.

3. Attempt any TWO of the following: **16**

a) List various types of foundation of bridges and explain any two types of foundation provided for RCC bridge.

b) Draw a neat sketch of plan and longitudinal section of bridge and show component parts of it.

c) List various methods of tunnelling and explain any one with sketch.

4. Attempt any TWO of the following: **16**

a) Classify the tunnels according to their functions.

b) Explain with sketch method of transferring the centre line from the ground inside the tunnel.

c) Explain the duties of permanent way inspector.

Marks

5. Attempt any FOUR of the following: **16**

a) State the types of track maintenance.

b) Explain with neat sketch the functioning of hump yards.

c) Define wing wall and list different types of wing walls.

d) List any eight factors needed for selection of ideal site for bridge.

e) State the factors on which shape and size of tunnel depend.

f) Enlist different steps followed in tunnelling in hard rock method.

6. Attempt any FOUR of the following: **16**

a) List any four points for inspection of bridge substructure and superstructure.

b) Explain with sketch roller rocker bearing.

c) Draw the cross sections of double headed and bull headed rail.

d) State the requirements of ideal sleepers.

e) Mention where the following types of ballast are suitable on rail track.

(i) Gravel

(ii) Cinder

(iii) Brick

(iv) Earth

f) List and draw dog spike and screw spike in railways.