

17418

11920

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 Electronic Communication devices are not permissible in Examination Hall.

Marks

- 1. Attempt any TEN of the following: **20****
- State the role of transportation in the development of nation.
 - State the different types of modes of transportation.
 - State the importance of cross drainage work.
 - Enlist the types of gauge.
 - Define permanent way.
 - Draw a sketch of flat footed rail.
 - Draw a sketch of bull headed rail.
 - Define afflux.
 - Define effective spun.
 - Classify the bridge according to alignment.
 - Enlist the types of pier.
 - Define tunnel
 - Enlist the classification of tunnel.
 - Enlist various shapes of tunnel.
 - Enlist the types of explosives used in tunneling.

P.T.O.

- 2. Attempt any FOUR of the following:** **16**
- a) State the factors affecting rail alignment.
 - b) State the requirement of railway station.
 - c) Draw the sketch of standard cross section of single broad gauge line in embankment.
 - d) State the duties of permanent way inspector.
 - e) Define creep and state the causes of creep.
 - f) State the suitability of following
 - (i) Metal sleeper
 - (ii) Concrete sleeper
- 3. Attempt any FOUR of the following:** **16**
- a) State the requirement and types of rail joint.
 - b) State the requirement of good ballast.
 - c) Enlist the various fixtures and fastenings of rail.
 - d) Describe in brief marshalling yard.
 - e) Enlist various types of data required for design of bridge.
 - f) Draw sectional elevation of bridge and label the parts.
- 4. Attempt any FOUR of the following:** **16**
- a) Define wing wall and state the functions of wing wall.
 - b) State the function and types of abutment.
 - c) Draw neat sketch of slab culvert.
 - d) State the requirements of ideal bearing.
 - e) Describe in brief temporary bridges.
 - f) State the situations where following types of foundation is Provided
 - (i) Well foundation
 - (ii) Pile foundation.

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

- a) Describe in brief maintenance of bridges.
- b) Describe in brief inspection of bridge.
- c) State the necessity of providing tunnel.
- d) State advantages and disadvantages of tunnel.
- e) Draw a neat sketch of tunnel for a national highway showing its components and dimensions.
- f) Describe in brief transferring center line inside the tunnel with neat sketch.

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

- a) State any four purpose of providing shafts.
 - b) Enlist the different methods used in tunneling in hard rock and soft rock.
 - c) State advantages and disadvantages of needle beam method.
 - d) State the precautions to be taken during construction of tunnels.
 - e) State the necessity of providing tunnel lining.
 - f) Discuss the different methods used for tunnel ventilation.
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