

17418

14115

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) 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. Attempt any **TEN** of the following:

20

- Define the term 'Rail gauge'.
- Write two advantages of tunnels
- Enlist four types of Rail joint.
- Define 'Gradient' and 'Super elevation'
- Define point and crossing.
- Enlist four types of yards.
- Define Tunnel Engineering.
- Write two requirement of Piers.
- Enlist two function of Abutment.

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Marks

- j) Enlist the explosive commonly used in tunnelling work.
- k) What do mean by Mucking.
- l) Define H.F.L. and culvert.
- m) Define Negative cant.
- n) State the purpose of fish plate.
- o) State types of bridge floorings.

2. Attempt any FOUR of the following: 16

- a) State the role of transportation in the development of nation.
- b) Compare bridge approaches in cutting and embankment.
- c) What are the various zones of Indian Railways?
- d) State any four factors affecting the Rail Alignment.
- e) Draw neat sketch of standard c/s of B.G. in cutting and embankment.
- f) State types of bridge foundations.

3. Attempt any FOUR of the following: 16

- a) Define creep of Rails? What are its causes.
- b) Explain with sketch coning of wheels.
- c) Write any four functions of Ballast.
- d) Define gradient and State its types.
- e) Draw the line sketch of diamond crossing and cross over.
- f) Explain clear span, effective span and economical span of bridges.

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- 4. Attempt any TWO of the following: 16**
- a) Name methods used for tunnelling in hard rock. Explain any one with sketch.
 - b) Classify tunnels based on shape and purpose. Draw four types of shapes of tunnels used in highways.
 - c) State points to be considered in special maintenance of bridge.
- 5. Attempt any FOUR of the following: 16**
- a) Define culvert? Explain any one type with neat sketch.
 - b) What is Rocker-Roller bearing? Draw a neat sketch of it.
 - c) State the factors governing the selection of a bridge site.
 - d) Write a note on Inspection of bridge.
 - e) Compare R.C.C. bridge and Steel bridge (any four).
 - f) List the important equipments and machines used in tunnel construction with their use.
- 6. Attempt any FOUR of the following: 16**
- a) What is the necessity of ventilation of tunnels? Write four points, name methods of ventilation.
 - b) Explain the type of survey required during tunnel construction including laying its centre line.
 - c) Write four points about necessity of tunnels.
 - d) Write advantages and disadvantages of tunnel construction (two each).
 - e) State classification of tunnels.
 - f) Define the following terms:
 - (i) Pier
 - (ii) Approaches
 - (iii) Wingwall
 - (iv) Causeway
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