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16117

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) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any TEN of the following: 20
- a) Enlist various modes of transportation systems.
 - b) State any two advantages of shafts in tunnel.
 - c) State the component parts of bridges.
 - d) Define afflux.
 - e) Define cant deficiency.
 - f) List the types of gauges provided in Indian railways with gauge width.
 - g) Define tunnel ventilation.
 - h) Define abutment and wing walls.
 - i) State the factors governing rail alignment.
 - j) What are the objectives of tunnel ventilation.
 - k) State the necessity of maintenance of bridge.

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- l) Define mucking.
- m) State the importance of cross drainage works for railway.
- n) State the role of transportation in development of nation.

2. Attempt any FOUR of the following: 16

- a) What is negative cant? Explain with sketch.
- b) Draw the labelled sketch of single line B.G. track in the embankment.
- c) State the different function of ballast.
- d) What is tilting of rails? Explain with sketch.
- e) Draw labelled sketch of diamond crossing.
- f) What is the necessity of track maintenance.

3. Attempt any TWO of the following: 16

- a) What is “Coning of wheel”? Explain the behaviour of coned wheel on curved path with neat sketch.
- b) What are causeways? Under what circumstances causeways are provided. Explain any one causeway with neat sketch.
- c) Draw neat sketch of open bridge floor for single B.G. line.

4. Attempt any FOUR of the following: 16

- a) Enlist the factors affecting selection of site for a bridge.
- b) Classify the bridges according to
 - (i) functions
 - (ii) span
- c) State the requirements of good abutement?
- d) State functions of wing walls. Enlist different types of wing walls.
- e) What is Marshalling Yard?
- f) What is culvert? State its types. Explain any one with neat sketch.

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

- a) State the classification of tunnel.
- b) Explain routine maintenance and special maintenance.
- c) Define tunnel lining? What is the purpose of lining of tunnel.
- d) What are the favourable conditions where tunnel ventilation is possible.
- e) Why shafts are provided in the construction of proposed tunnel.
- f) Describe heading and bench method of tunneling in hard rock with neat sketch.

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

- a) State the advantages and disadvantages of tunnel.
 - b) State factors on which shape and size of tunnel depends.
 - c) Explain needle beam method of tunneling.
 - d) What are the precautions to be taken while construction of tunnels?
 - e) State the requirements of an ideal sleeper provided on railway track.
 - f) Define:
 - (i) Effective span
 - (ii) Scour
 - (iii) Waterway
 - (iv) Deck bridge
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