



301002

Seat
No.

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T.E. (Civil) (Semester – I) Examination, 2014
INFRASTRUCTURE ENGINEERING AND CONSTRUCTION TECHNIQUES
(2008 Pattern)

Time : 3 Hours

Max. Marks : 100

- Instructions :**
- 1) Answers to the **two** Sections should be written in **separate** answer books.
 - 2) Answer **any three** questions from **each** Section.
 - 3) **Neat** diagrams must be drawn **wherever** necessary.
 - 4) Figures to the **right** side indicate **full** marks.
 - 5) Use of calculator is **allowed**.
 - 6) Assume suitable data if **necessary**.

SECTION – I

1. a) Explain in brief the role of transportation in infrastructure development. 6
- b) Draw a typical cross section of a permanent way. Explain briefly the functions of various components of the Railway Track. 4
- c) Compare the characteristics of wooden sleepers and concrete sleepers. 6

OR

2. a) Enlist the various types of material used for Ballast. Mention the properties required of a good ballast for railway track. 6
- b) What are the functions of rails ? Name the various types of rail in use. 4
- c) What are main functions of formation ? Suggest remedial measures for failure of foundation. 6
3. a) Define the following terms : 6
 - 1) Ruling gradient
 - 2) Pusher gradient
 - 3) Momentum gradient and
 - 4) Compensatory gradient.
- b) What is meant by grade compensation for curvature ? To what extent should a ruling gradient of 1 in 160 on a Meter Gauge line be downgraded to accommodate a 3° curve. 6
- c) Write a short note on Direct Track Maintenance. 4

OR

4. a) What is super elevation why is it necessary to provide super elevation on the curves of railway track ? Also explain the concept of negative super elevation. 6
- b) Explain with a neat sketch the components of Right Hand Turnout. 6
- c) Write a short note on Metro Rail and Monorail. 4

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5. a) Differentiate between following : 6
- 1) Natural and artificial harbour
 - 2) A Wharf and Quay
 - 3) A Jetty and Pier.

b) Describe the factors which influence the shape and size of tunnel. 6

c) Write a short note on NATM method of tunneling. 6

OR

6. a) What is Mucking ? State the various methods of Mucking and explain any one in brief. 6

b) Explain with a neat sketch the following : 6

- 1) Pilot Tunnel
- 2) Dolphins
- 3) Tetra pods
- 4) Fender

c) State and explain advantages of Tunnels over open cut. 6

SECTION – II

7. a) What is hoisting ? Enlist the various hoisting equipments used in high rise construction. 6

b) What do you mean by high rise structures ? What are the construction techniques used for the construction of high rise structures ? 6

c) What is Siporex technology ? Explain. 4

OR

8. a) What are the various types of cranes on the basis of (i) type of operation source (ii) type of movement (iii) based on load. Draw the sketch of Whirler crane. 6

b) Write a short note on concrete pump. 4

c) Write down the advantages and disadvantages of precast construction. 6

9. a) Write down the factors affecting output of power shovel. Explain each factor in detail. 6

b) Write a short note on loader dozer with suitable sketch. What are the types of blades of dozer ? 6

c) Explain in brief the following : 6

- i) Equipment working rates
- ii) Record keeping.

OR



10. a) What are the factors affecting selection of equipment for construction project ? 6
b) Explain in brief the types and use of dumper. 6
c) Write a short note on : 6
i) Operation cost
ii) Depreciation.
11. a) What is dredging ? What are the different techniques used for dredging ? 6
b) Explain in brief what Tremie method is. 6
c) Write a short note on slip form technology. 4
- OR
12. a) What is well point system of dewatering ? Explain with suitable sketch. 6
b) Explain the procedure of preparation of aggregate by drawing flow diagram. What are the various components of crusher plant. 6
c) Write a short note on Barges. 4

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