Total No. of Questions : 12]

SEAT No. :

P2379

[Total No. of Pages : 4

[5153]-2
T.E. (Civil)
INFRASTRUCTURE ENGINEERING AND CONSTRUCTION TECHNIQUES
(2008 Course) (Semester - I)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, and Q.5 or Q.6 from Section - I Q.7 or Q.8, Q.9 or Q.10 and Q.11 or Q.12 from Section - II.***
2) ***Answer to the two Sections should be written in separate books.***
3) ***Figures to the right indicate full marks.***
4) ***Use of logarithmic tables, slide rule, Mollies charts, electronics pocket calculator and steam table is allowed.***
5) ***Assume suitable data if necessary.***
6) ***Neat diagrams must be drawn wherever necessary.***

SECTION - I

Q1) a) What are the political, social and economical advantages of railways. **[6]**

b) Define rail. State the various functions of rails. **[4]**

c) Draw a typical cross section of a permanent way. Discuss in brief the basic functions of various components. **[6]**

OR

Q2) a) Define sleeper density. Using sleeper density of M+5, find out the number of sleepers required for constructing a B.G. railway track of 640 meter length. **[6]**

b) Define ballast. Why ballast is provided under railway track. **[4]**

c) What are main functions of Formation? Suggest remedial measures for failure of foundation. **[6]**

P.T.O.

Q3) a) What do you understand by Grade compensation on Curves? What would be the actual gradient for BG line on a curve of 3° with ruling gradient of 1 in 250. **[6]**

b) Define gradient. How it is expressed? State and explain various types of gradients. **[6]**

c) Write a short note on Modernisation of Indian railways. **[4]**

OR

Q4) a) What would be the equilibrium cant on a MG curved track of 7° for an average speed of trains 50 Kmph? Also calculate the maximum permissibel speed after allowing the maximum cant deficiency. (Cant deficiency for MG = 5.0 cm) **[6]**

b) Draw a neat line diagram of right hand turnout and show its various components. **[6]**

c) Write a short note on Metro Rail and Monorail. **[4]**

Q5) a) Define Port. Mention the factors which play a great role in site selection for Port. Name any two prominent ports in India. **[6]**

b) Discuss in brief the following methods of tunnelling in Hard Rock: **[6]**

i) Heading and Bench Method and

ii) Drift Method

c) Write a short note on Tunnel Ventilation and Tunnel Drainage. **[6]**

OR

Q6) a) Explain in brief California crossing method and Cherry Picker method. **[6]**

b) Explain in brief the following: **[6]**

i) Wharves

ii) Dry dock

iii) Wet Dock

iv) Buoys

c) State and explain advantages of Tunnels over Open Cut. **[6]**

SECTION - II

Q7) a) Explain in brief the role of construction sector in the economic development of a country. **[4]**

b) Explain in brief the following: **[8]**

i) Heavy Engineering construction

ii) Industrial Construction

c) Draw a neat labelled sketch of a static tower crane. **[4]**

OR

Q8) a) What do you mean by hoisting operation? State various types of hoist. Explain any one in brief. **[6]**

b) State the classification of cranes. Explain with a neat sketch derrick crane. **[6]**

c) What factors are considered while selecting any crane? **[4]**

Q9) a) Distinguish between Rope operated Shovel and Hydraulically operated shovel. **[6]**

b) What points you will considered while selecting any equipment for civil engineering project. **[4]**

c) How will you differentiate the working operation of Power shovel & Backhoe. Also mention the use of power shovel and back hoe. **[6]**

OR

Q10)a) State the advantages and disadvantages of Crawler Tractor. **[8]**

b) Enumerate the various components of the Owning cost and Operating cost. **[8]**

Q11)a) Meniton the various methods of underwater concreting. Explain any one method in brief.Also draw a neat sketch. **[8]**

b) Explain with the sketch the layout for production of crushed sand? **[6]**

c) Write a short note on types of Barges. **[4]**

OR

Q12)a) Highlight the importance of dewatering while construction of foundation. Explain any one method in brief. **[8]**

b) Write a short note on Concrete pumps. **[6]**

c) Draw schematic layout of Aggregate processing Plant. **[4]**