Total No. of Questions : 12]

SEAT No. :

**P3389**

[Total No. of Pages : 3

# [5253]-502

## T.E. (Civil) (Semester - I)

## INFRASTRUCTURE ENGINEERING & CONSTRUCTION TECHNIQUES

## (2015 Pattern)

*Time : 2½ Hours]* *[Max. Marks : 70*

***Instructions to the candidates:***

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10 and Q11 or Q12.***
2) ***Neat diagram, must be drawn wherever necessary.***
3) ***Figures to the right side indicate full Marks.***
4) ***Assume, suitable data, if necessary.***

***Q1)*** Explain Bus Rapid Transit System (BRTS) including its necessity and advantages. **[6]**

OR

***Q2)*** Compare railway transportation with road transportation. **[6]**

***Q3)*** a) Explain in brief advantages and disadvantages of concrete sleepers. **[4]**

b) Explain the Points and Crossing. Draw neat labeled diagram of turnout. **[4]**

OR

***Q4)*** a) Define the following: **[4]**

i) Turnout;

ii) Tongue rail;

iii) Stock rail;

iv) Switch

b) Discuss in brief different methods to reduce the wear of rails. **[4]**

***Q5)*** What are the various methods of dewatering system? Explain any one method with suitable sketch. **[6]**

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OR

***Q6)*** List various Dredging Systems. Explain any one with sketch. **[6]**

***Q7)*** a) What do you understand by mucking? State various methods of mucking and explain any one in detail. **[6]**

b) Compare the advantages and disadvantages of tunnels with open cut. **[6]**

c) Write a short note on TBM. **[4]**

OR

***Q8)*** a) Explain in detail NATM method of tunneling. **[6]**

b) What do you understand by the term drilling pattern? Explain the need for drilling pattern. **[6]**

Discuss the types of drilling pattern.

c) Write a short note on micro tunneling. **[4]**

***Q9)*** a) Define harbor. State the requirements of good harbor. **[6]**

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

i) Dry dock;

ii) Fenders;

iii) Jetties

c) Differentiate between wharves and quay. **[4]**

OR

***Q10)***a) Discuss in detail various methods of construction of breakwater wall. **[6]**

b) Draw the schematic diagram of harbor layout showing all components. **[6]**

c) Differentiate between natural and artificial harbor. **[4]**

***Q11)***a) A construction equipment on a work site costs Rs. 3,50,000 and has expected life of 5 years and salvage value of Rs. 40,000 at the end of useful life. Calculate yearly depreciation of the machine using **[6]**

i) straight line method and

ii) sum of year method.

b) What are the factors to be considered for calculation of output estimation of equipment? **[6]**

c) Write short note on: Preventive maintenance of equipment. **[6]**

OR

***Q12)***a) Construction machinery costs Rs 45,000. It's useful life is 5 years. The salvage value at the end of five years is Rs. 4,500. Estimate the yearly depreciation of the equipment using **[6]**

i) straight line method and

ii) double-declining balance method.

b) Write short note on: **[12]**

i) economic life of equipment;

ii) backhoe;

iii) dumpers