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**Question Paper Code : 50283**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2017

Fifth Semester

Civil Engineering

CE 6503 – ENVIRONMENTAL ENGINEERING – I

(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART – A

(10×2=20 Marks)

1. Find the fire demand for a city with a population of 3500 using Freeman's formula.
2. Define potable water.
3. List out the various joint's in cast iron pipes.
4. How the corrosion of metal pipes is reduced ?
5. Write the nature of any four coagulants.
6. Write the function of sedimentation tanks.
7. Define zeolite process.
8. List out the various types of aerators.
9. What are the methods available to find the leakages in pipe line ?
10. Where the ring system of water distribution system is adopted ?

PART – B

(5×13=65 Marks)

11. a) Explain about the various methods employed for population forecasting and what are the factors influencing the population forecasting ?

(OR)

- b) i) Briefly discuss about the various types of aquifer's with neat sketch. (7)
- ii) Write down the water quality standards for drinking purpose as per B.I.S. (6)



12. a) Define intake structure and briefly discuss about the various types of intake structure with neat sketch.

(OR)

- b) i) Write brief notes on laying pipe lines and testing of pipe lines. (7)  
ii) Explain the principle operation of a centrifugal pump with neat sketch. (6)

13. a) Design a coagulant sedimentation tank to treat 8 million liters of water per day. Assume suitable data if necessary.

(OR)

- b) Explain about slow sand filter and rapid sand filter with suitable diagram and also write their advantages over them.

14. a) Explain the methods of removing temporary and permanent hardness from water.

(OR)

- b) Discuss in detail about any two methods of de-fluoridation technique.

15. a) Explain in detail about the various types of main water distribution system with neat sketch.

(OR)

- b) Write brief notes on :

i) Waste water detection method. (6)

ii) Various Pipe fitting with neat sketch. (7)

PART – C

(1×15=15 Marks)

16. a) Briefly discuss about the various physic-chemical test on water and write their limitation for domestic and industrial purpose.

(OR)

- b) Design a  $20 \times 10^6$  L.P.d water treatment plant with rapid gravity sand filter. Assume suitable design parameters.
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