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Question Paper Code: 93104

B.E. / B.Tech DEGREE EXAMINATION, MAY 2022

Third Semester

Civil Engineering

19UCE304 Water Supply Engineering

(Regulation 2019)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Which source of water, among the following, is not a surface source? CO3- Ana
(a) River (b) Well (c) Lake (d) Ocean
2. As per IS : 1172-1963, water required per head per day for average domestic purposes, is CO1- U
(a) 50 Litres (b) 60 Litres (c) 135 Litres (d) 80 Litres
3. Most commonly used pump for lifting water in water supply mains, is CO1- U
(a) axial flow pump (b) reciprocating pump
(c) rotary type pump (d) centrifugal pumps
4. In pressure supply mains, water hammer pressure is reduced by providing CO3- Ana
(a) sluice valves (b) air valves (c) pressure relief valves (d) none of the these
5. In which treatment unit backwash process is adopted? CO3- Ana
(a) Rapid sand filter (b) slow sand filter (c) Pressure filter (d) All the above
6. The process of inducing oxygen to the raw water is ____ CO1- U
(a) Disinfection (b) Softening (c) Aeration (d) liming
7. Aeration of water is done to remove CO1- U
(a) odour (b) colour (c) bacteria (d) hardness
8. The water used for boilers must be CO2- App
(a) hard (b) soft (c) potable (d) none of the above

9. Leaks occurring through pipe connections at the water meters is a component of CO3- Ana
- (a) Real Loss (b) Apparent loss
- (c) Commercial loss (d) All of the above
10. Service connections consists of CO1- U
- (a) ferrule stop cock (b) ferrule, goose neck
- (c) stop cock, check valves, sluice valve (d) all the above

PART – B (5 x 2= 10 Marks)

11. What is design period? CO1- U
12. Which type of pipe is most suitable for transfer water from intake unit to treatment plant? CO3- Ana
13. Differentiate between Unit operations and Unit Process. CO3- Ana
14. What is reverse osmosis? CO1- U
15. Write down the methods of distribution of water? CO1- U

PART – C (5 x 16= 80 Marks)

16. (a) You are given a task to estimate the quantity of water required while arranging a water supply scheme. Analyze the various factors that per capita demand of consumers. CO3- Ana (16)
- Or
- (b) You are given with few water samples for testing. What are the various physical, chemical and biological characteristics that have to be observed? CO3- Ana (16)
17. (a) Classify the types of intakes. Also explain the working of a reservoir intake with a neat sketch. CO3- Ana (16)
- Or
- (b) You are given a task to pump water from low level to a higher gradient. Analyse the factors to be considered. Discuss about various pumps. CO3- Ana (16)

18. (a) Design a rectangular sedimentation tank for a flow of 5MLD. CO3- C (16)
- Or
- (b) Design six slow sand filter beds from the given data: Population to be served - 50,000 persons; Rate of filtration – 180 L/hr/sq.m; Per capita demand - 150 L/head/day; Length of each bed – twice its breadth. Assume maximum demand as 1.8 times the average daily demand. Also one unit out of 6 is kept as stand by. CO3- C (16)
19. (a) Enumerate and discuss about various methods of iron and manganese removal. CO2- App (16)
- Or
- (b) With relevant equations explain the methods of removing temporary and permanent hardness of water. CO2- App (16)
20. (a) Enumerate the functions of service reservoir? Briefly outline the design aspects of service reservoir. CO3- Ana (16)
- Or
- (b) With a neat sketch, explain about the layout of water distribution system. CO3- Ana (16)

