Register Number:……..

B.E., DEGREE EXAMINATIONS:JUNE/ JULY 2013

Fifth Semester

CIVIL ENGINEERING

CEE116: Environmental Engineering - II

Time: Three Hours **Maximum Marks: 100**

Answer ALL Questions:-

PART A (10x1=10 Marks)

1. Generally flow through period of a sedimentation tank is
   a) Less than detention period b) more than detention period
   c) exactly equal to detention period d) sometimes more and sometimes less
2. Optimum dose of coagulant means that the least dose that produces
   a) Maximum amount of floc b) Floc whose density is very high
   c) maximum amount of floc within the least time d) readily settleable floc
3. Waters from the following source is likely to be hard
   a) River b) lake c) deepwell d) shallow well
4. For an old city with constraints for growth the best method of forecasting future population is
   a) Arithmetical increase method b) geometrical increase method
   c) graphical method d) incremental increase method
5. A minimum amount of DO desirable in any water body is not less than
   a) 1 mg/L b) 2 mg/L c) 3 mg/L d) 5 mg/L
6. Fluorides are beneficial in water when present in concentration upto
   a) 2 ppm b) 1 ppm c) 2.5 ppm d) 1.5 ppm
7. Breakpoint determination leaves only
   a) Chloro organic compounds b) chloramine
   c) reducing compounds d) free available chlorine
8. Use of reservoir makes it possible to
   a) Store water for reserve
   b) reduce the size of pumps and pipes necessary to supply water
   c) reduce the distance to supply to city
   d) reduce the electricity for pumping
9. Hardly cross method is the
   a) balancing loss through assuming flow
   b) balancing the network for flow
   c) balancing hand los in network
   d) balancing inflow and outflow in network of pipes

10. Safe and wholesome water is
    a) unpolluted, free from toxic substances and excess mineral
    b) free from odour and toxic substances
    c) free from excessive minerals and bacteria
    d) free from organic and inorganic pollutants

PART B (10 x 2 = 20 Marks)

11. What is design period?
12. Define per capita water supply. What is the demand of water supply for a residential municipal area?
13. What is the design discharge of distribution system over average daily requirement of water?
14. What is the allowance you make for five protections?
15. What are canal intakes?
16. Why centrifugal type of pump is suitable for large capacities both for raw and treated water supplies?
17. When is a water called hard water? Why?
18. What is the necessity of excess fluoride removal?
19. What is a balancing reservoir?
20. Define equivalent pipes.

PART C (5 x 14= 70 Marks)

21. a) (i) What are the objectives and planning factors of water supply system? (10)
    (ii) How these are achieved in water supply system? (4)

(OR)

b) Mention the different methods of forecasting the future population of a given town. Describe in detail anyone of the methods.

22. a) (i) Find out the discharge of an artesian well with the following data (7)

Diameter of well	=	25cm
Thickness of aquifer	=	15m
Transmissibility coefficient K of the well	=	54 lpm
Depth of drawdown	=	6m
Radius of circle of influence	=	90m

(ii) Explain how you would determine the yield from a deep well. (7)

(OR)

b) (i) What is meant by mass diagram? How it is useful in determining storage requirement of an impounding reservoir? (7)

(ii) What are general factors to be considered in deciding a suitable site for its location?(7)

23. a) (i) Draw a sketch of spigot and socket joint showing the position of the materials used in making it water tight. (8)

(ii) How will you test the soundness of your construction before bringing a pipe live into commission? (6)

(OR)

b) (i) What are the factors required to be considered in the selection of the type of pump? Discuss the situations under which the following types of pumps used

(i) Reciprocating pumps (5)
(ii) Centrifugal pumps (4)
(iii)Air lift pumps (5)

24. a) (i) Why must the rate of filtration controlled and how is it done? (6)

(ii) What are the usual rate of filtration allowed in rapid and slow sand filters respectively? Why are these different rates to be used? (8)

(OR)

b) (i) State the criteria commonly employed in the design of plain sedimentation tanks used at water treatment plants. (7)

(ii) What should be the size of a rectangular sedimentation tank to treat 1 mld with 2 hour detention and overflow rate less than 50000 lit per day per sq.cm of the surface area. (7)

25. a) (i) What points are to be considered in the design of distribution system? (7)

(ii) What are different methods of analyzing a given distribution system? Explain anyone in detail. (7)

(OR)

b) For the water supply of a small rural town with the daily requirement of 225000 litres, it is proposed to construct a distribution reservoir, The pattern of draw off is as under:

7AM	- 8AM	30% of day's supply
8AM	- 5PM	35% of day's supply
5PM	- 6.30PM	30% of day's supply
6.30PM	- 7AM	5% of day's supply

The pumping is to be done at a constant rate of 8 hours (8AM – 4PM). Determine the storage capacity of the reservoir.

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