

Reg. No. \_\_\_\_\_

# Karunya University

(Karunya Institute of Technology and Sciences)

(Declared as Deemed to be University under Sec.3 of the UGC Act, 1956)

## End Semester Examination – November/December 2010

Subject Title: WATER SUPPLY ENGINEERING

Time: 3 hours

Subject Code: CE224

Maximum Marks: 100

### Answer ALL questions

#### PART – A (10 x 1 = 10 MARKS)

1. What do you understand by percapita demand?
2. Define residual chlorine.
3. What is the method of treatment for turbidity removal in water?
4. Why is the removal of hardness necessary in water?
5. Define mass curve technique for the storage of reservoir.
6. Why are CI pipes used in water distribution?
7. What is equivalent pipe in distribution system?
8. What is the residual pressure to be maintained in the distribution system when connected to house?
9. Why is river water preferred in drinking?
10. Say few appurtenances used in a water supply pipe lines.

#### PART – B (5 x 3 = 15 MARKS)

11. Discuss various factors that affect the rate of demand.
12. What are the methods available for forecasting the future population of a city? Which method is the best method? Why?
13. What do you understand by waterborne diseases?
14. What is meant by Coagulation? What are the common coagulants used?
15. Compare the continuous and intermittent systems of water supply.

#### PART – C (5 x 15 = 75 MARKS)

16. A town has a population detail as given under. Estimate the future population in the year 2020. Justify the method your have used.

| Year       | 1920     | 1930     | 1940     | 1950      | 1960      | 1970      | 1980      |
|------------|----------|----------|----------|-----------|-----------|-----------|-----------|
| Population | 3,00,000 | 4,40,000 | 8,95,000 | 14,50,000 | 16,13,000 | 17,93,000 | 20,00,000 |

(OR)

17. a. What are the various objectives of a water supply scheme?  
b. What do you understand by fluctuations in demand? Explain how you will take into account these fluctuations in the design of various components of a water supply scheme.
18. a. Outline the considerations involved in the choice of a source of water supply. (6)  
b. A 2m diameter well is pumped at a constant rate of  $0.85\text{m}^3/\text{minute}$  producing drawdowns of 0.80m and 0.25m in two test wells 30m and 60m away respectively from the well. Depth of water before pumping was 15m. Find the radius of zone of influence of well.  
(OR)
19. a. What is sanitary protection of wells? Explain the methods. (7.5)  
b. What are infiltration galleries? Describe briefly with neat sketches. (7.5)

[P.T.O]

20. a. Discuss briefly the procedure followed in laying and testing the water supply mains. (7.5)  
b. Sketch and explain the function of gate valves, reflux valves. (7.5)  
(OR)
21. a. What are different materials which are commonly used for water supply pipes? Discuss their comparative merits and demerits. (9)  
b. Give notes on jointing of cast iron pipes. (6)
22. a. Write brief notes about coagulation and flocculation. (7.5)  
b. Explain the terms detention period and overflow rate with respect to sedimentation. (7.5)  
(OR)
23. a. What are the objectives of disinfection in water treatment? (7.5)  
b. Explain the principles of disinfection. (7.5)
24. Explain the Hardy cross method used for pipe network analysis in water distribution systems.  
(OR)
25. Write notes on:  
a. Cathodic protection of corrosion control. (7.5)  
b. Leak detection. (7.5)