Reg. No. : | | | | | | | | | | |

Question Paper Code: 31515

B.E. / B.Tech. DEGREE EXAMINATION, NOVEMBER 2015

Fifth Semester

Civil Engineering

01UCE505 – WATER SUPPLY ENGINEERING

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. List the any four objectives of water supply schemes.
2. Mention the acceptable limits for drinking water quality standards of calcium, iron, chlorides and total dissolved solids as per *IS:10500*.
3. Define intake structures.
4. What are the factors involved in the selection of pipe materials?
5. Distinguish between coagulation and flocculation.
6. How will you remove the iron and manganese from the water?
7. State water softening.
8. Define adsorption.
9. State the functions of service reservoir.
10. Mention the appurtenances used in distribution system.

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Given the following data, calculate the future population for the year 2030 by incremental increase method. (8)

Year	1970	1980	1990	2000	2010
Population	85000	110500	144000	184000	221000

(ii) Discuss the factors affecting per capita demand. (8)

Or

(b) (i) Explain the various sources of water. (8)

(ii) Enumerate the physical and chemical characteristics of water and their examination methods. (8)

12. (a) (i) Water is pumped from a river 3 *km* away, into a reservoir to supply water. The maximum difference of levels of water in river and reservoir is 25 *m*. The population of the town is 90,000 and per capita demand is 150 *lpd*. If the pumps are operated for 10 hours, determine the size of the pipe and the power of the pump. Assume the velocity of flow = 1.9*m/s*. f = 0.0075; efficiency of pump = 70%; Maximum daily demand as 1.5 the times average demand. (8)

(ii) With a neat sketch explain the reservoir intake structure. (8)

Or

(b) (i) Discuss the steps involved in laying of water supply pipes. (8)

(ii) Discuss the factors involved in the selection of pumps for water supply schemes. (8)

13. (a) (i) With a neat sketch explain the working of rapid sand filter. (8)

(ii) Discuss the function and design aspects of flash mixer. (8)

Or

(b) (i) Explain the causes and control measures for pipe corrosion. (8)

(ii) Discuss the principle and methods of disinfection. (8)

14. (a) (i) Explain the Zeolite method of water softening with its advantages. (8)

(ii) With a neat sketch explain the reverse osmosis method for desalination. (8)

Or

(b) (i) Explain the electro dialysis method of desalination with a diagram. (8)

(ii) Explain the demineralization process of water softening. (8)

15. (a) (i) What are the requirements of a good distribution system? (8)

(ii) Discuss the methods of leak detection. (8)

Or

(b) (i) Explain the analysis of distribution network using Hardy Cross method. (8)

(ii) Explain the components of house service connection with a neat sketch. (8)

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