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

Question Paper Code: 45105

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2021

Fifth Semester

Civil Engineering

14UCE505 - WATER SUPPLY ENGINEERING

(Regulation 2014)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. When fluoride concentration in water exceeds 1.5 mg/l or so, the disease that may cause is

   (a) Methemoglobinemia (b) Fluorosis
   (c) Dental carries in children (d) Poliomyelitis

2. Coincident draft in relation to water demand is based on

   (a) peak hourly demand (b) maximum daily demand
   (c) maximum daily + fire demand (d) greater of (a) and (c)

3. The formula which is most appropriate to the design of pressure pipes is

   (a) Darcy weisbach formula (b) Mannings formula
   (c) Chezy's formula (d) Dupuit's formula

4. The maximum pressure, which a pipe can withstand without any leakage, during hydrostatic pressure test, is called the

   (a) working pressure (b) test pressure
   (c) design pressure (d) hydrostatic pressure

5. The fine screens are generally not used these days, in water treatment, as the fine suspended particles are removed in

(a) filtration (b) sedimentation
(c) aeration (d) disinfection

6. The percentage of chlorine in fresh bleaching powder is about

(a) 10-15 (b) 20-25 (c) 30-35 (d) 50-60

7. The suitable method for disinfection of swimming pool water is

(a) ultra violet rays treatment (b) lime treatment
(c) chlorination (d) potassium permanganate

8. Iron and manganese can be removed from water by

(a) boiling (b) aeration followed by coagulation
(c) chlorination (d) activated carbon

9. The suitable layout for a water supply distribution system, for a city of roads of rectangular pattern is

(a) dead end system (b) grid iron system
(c) ring system (d) radial system

10. The water meter, which is installed on individual house connections, on municipal supplies, is

(a) a velocity meter (b) an inferential meter
(c) a displacement meter (d) none of these

PART - B (5 x 2 = 10 Marks)

11. State the objectives of water supply system.

12. Write the factors influencing the selection of pumps.

13. Classify screens.

14. What is mean by water softening?

15. Name the leak detection methods practiced in water supply scheme.

PART - C (5 x 16 = 80 Marks)

16. (a) The population of locality as obtained from census report are as follows:

Census year	2001	2011	2021	2031	2041
Population	350000	466000	994000	1560000	1623000

Estimate the population of the locality in the year 2091 by using incremental increase method. (16)

Or

(b) Explain any four physical and chemical analysis to be carried out for drinking water. (16)

17. (a) (i) Differentiate between wet intake and dry intake towers. (8)

(ii) List out the different materials used in water supply pipes. (8)

Or

(b) Estimate the hydraulic gradient in a 2m diameter smooth concrete pipe carrying discharge of 3 cumecs at 10^0C temperature by using (i) Darcy-Weisbach formula (ii) Hazen Williams formula. (16)

18. (a) Explain the following methods of Disinfection: (i) Treatment with Ozone (ii) Treatment with UV Rays. (16)

Or

(b) A system of water has to purify the water for a town whose daily demand is 9×10^6 *litres/day*. Design the suitable sedimentation tank. Assume the velocity of flow as 22*cm/min* and the detention period as 8 *hours*. (16)

19. (b) Describe in detail about the "Zeolite Process" of water softening method in detail. (16)

Or

(b) Briefly explain the demineralization process used in water purification process in detail. (16)

20. (a) With a neat sketch explain the one pipe system of plumbing. (16)

Or

(b) (i) Discuss the general design principles of water supply in buildings. (8)

(ii) Explain the House service connection with neat sketch. (8)