

- (b) Explain different types of pumps with the working of each. **13**

6. Explain the following terms :

- (i) Manholes **7**  
(ii) Self-cleansing Velocity **6**  
(iii) Non-scouring Velocity **6**  
(iv) Flushing Tanks. **6**

**Section D**

7. (a) Explain briefly about the type of traps and their functions used in sanitary plumbing system. **13**  
(b) Write short notes on the following :  
(i) Two pipe system  
(ii) One pipe system. **6+6**
8. (a) Write short notes on the following :  
(i) Sanitary fittings  
(ii) Type of valves. **6+6**  
(b) Explain the various methods used to collect human excreta in unsewered rural areas. **13**

Roll No. ....

Total Pages : 05

**MAR-21-210186**

**B. Tech. EXAMINATION, March 2021**

Semester VI (NS)

WATER SUPPLY AND SYSTEM ENGINEERING

CE-350

Time : 2 Hours

Maximum Marks : 100

*The candidates shall limit their answers precisely within 20 pages only (A4 size sheets/assignment sheets), no extra sheet allowed. The candidates should write only on one side of the page and the back side of the page should remain blank. Only blue ball pen is admissible.*

**Note :** Attempt *Four* questions in all, selecting *one* question from each Sections A, B, C and D. All questions carry equal marks.

**Section A**

1. (a) The population of 7 decades from 1911 to 1971 are given below :

| Year | Population |
|------|------------|
| 1911 | 12000      |

|      |       |
|------|-------|
| 1921 | 16500 |
| 1931 | 26800 |
| 1941 | 41500 |
| 1951 | 57500 |
| 1961 | 68000 |
| 1971 | 74100 |

Find out the population in 1991 by :

- (i) Arithmetic increase method
  - (ii) Geometric increase method. **12.5**
- (b) What are intake structures ? What are the important considerations which govern the selection of sites of an intake structure ? **12.5**
2. (a) What do you understand by water quality standards ? Explain the significance of water quality standards in water supply project ? Give the values of acceptable limit and maximum permissible limit of water with respect to the following parameters :
- (i) Sulphate
  - (ii) Magnesium
  - (iii) Lead. **12.5**

- (b) What are the physical, chemical and biological characteristics of domestic waste water ? Explain them in detail. **12.5**

### Section B

3. (a) Explain the sedimentation process used in a water treatment plant. Draw a neat sketch of sedimentation process in which coagulant is used. **12.5**
- (b) Distinguish between slow sand filter and rapid sand filter. **12.5**
4. Explain the following terms :
- (a) Break-point chlorination **7**
  - (b) Super chlorination **6**
  - (c) Oxidation lagoons **6**
  - (d) Flocculation. **6**

### Section C

5. (a) Discuss briefly about the following :
- (i) Distribution network
  - (ii) Distribution reservoirs. **6+6**

9. Briefly explain the following :

- (i) pH value
- (ii) Reverse Osmosis
- (iii) Inverted Syphon
- (iv) Activated Sludge
- (v) Septic Tank
- (vi) Biochemical Oxygen Demand
- (vii) Sullage
- (viii) Pressure Release Valve
- (ix) Water Meters
- (x) Instantaneous Geysers.

**10×2.5=25**

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