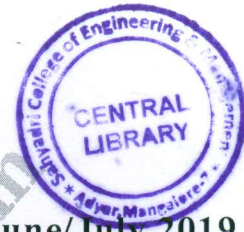


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10CV61

**Sixth Semester B.E. Degree Examination, June/July 2019**  
**Environmental Engineering – I**

Time: 3 hrs.

Max. Marks:100

**Note: 1. Answer any FIVE full questions, selecting at least TWO questions from each part.**  
**2. Missing data may be suitably assumed.**

**PART – A**

1. a. Discuss the necessity of having a planned water supply scheme for a city. (04 Marks)  
 b. List and discuss the factors affecting per capita demand. (10 Marks)  
 c. Compute the population of the year 2000 and 2006 for a city whose population in the year 1930 was 25,000 and in the year 1970 was 47000 by geometric increase method. (06 Marks)
2. a. Briefly explain the surface and groundwater sources with respect to quality and quantity. (06 Marks)  
 b. With the help of neat sketch, explain twin well type of a river intake. (08 Marks)  
 c. Briefly explain the factors affecting the selection of a particular type of pump. (06 Marks)
3. a. Write the significance and BIS for the following water quality parameters:  
 i)  $p^H$  ii) Nitrate iii) Fluoride iv) Iron v) E-Col (10 Marks)  
 b. Briefly explain the water borne diseases and their control. (05 Marks)  
 c. Briefly explain the methods of sampling of water for examination. (05 Marks)
4. a. With the help of flowchart, write the functions of various units of water treatment plant. (08 Marks)  
 b. Briefly explain the theory of sedimentation. (06 Marks)  
 c. A water work has to purify the water for a town whose daily demand is  $9 \times 10^6$  lit/day. Design the suitable rectangular sedimentation tank of the water works filled with mechanical sludge remover. Assume the velocity of flow in the sedimentation tank as 22 cm/minute and the detention time as 8 hours. (06 Marks)

**PART – B**

5. a. Explain in detail, the mechanism involved in water filtration. (06 Marks)  
 b. With the help of neat sketch, explain rapid sand filter. (08 Marks)  
 c. Design suitable dimensions for a rapid sand filter to treat 4 MLD of water supply and assume that 4% of filtered water is required for washing of filter every day. (06 Marks)
6. a. What is meant by disinfection of water? Discuss the theory of disinfection by chlorine. (06 Marks)  
 b. Briefly explain the different methods of disinfection. (08 Marks)  
 c. With the relevant chemical equation, explain the zeolite process of water softening. (06 Marks)
7. a. What is meant by Fluoridation and Defluoridation? With the help of line diagram, explain 'Nalaganda Technic' of defluoridation. (08 Marks)  
 b. List the various layouts used in water distribution system. Discuss in detail 'dead-end' system. (06 Marks)  
 c. Mention the system of water supply and write the limitations of intermittent system. (06 Marks)
8. Write short notes on: (20 Marks)
  - a. Fire hydrants
  - b. Water meters
  - c. Check valve
  - d. Pressure release valve

\* \* \* \* \*

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
 2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.