B. TECH.
(SEM - V) THEORY EXAMINATION 2019-20
ENVIRONMENTAL ENGINEERING -I

Time: 3 Hours   *Total Marks: 100*

Note Attempt all Sections. If require any missing data then choose suitably.

SECTION A

1. **Attempt all questions in brief.**   **2 x 10 = 20**

a.   Enlist the various surface and underground sources of water.

b.   What are the various purposes for which water is required?

c.   What are the important requirements of water for domestic use?

d.   What are different methods for the detection of leakage of water?

e.   How can leakage of water to be detected?

f.   Name the different types of pipe joints used for joining the different types of pipes.

g.   Write the factors on which selection of site for distribution reservoirs depends?

h.   Write the names of the common impurities present in water.

i.   Discuss in brief the domestic hot water appliances.

j.   What is a manhole and its objects?

SECTION B

2. **Attempt any *three* of the following:**   **10 x 3 = 30**

a.   Population of a town is obtained from the census report as follows:

Year	1941	1951	1961	1971
Population (in thousand)	242	242	770	1090

Estimate the population of the town in the year 1981,1991,& 2001 by
   i.   Arithmetic increase method
   ii.   Incremental increase method

b.   Discuss the advantages and disadvantages of various types of pipes used in water supply.

c.   Describe the various method of distribution water and discuss the advantages and disadvantages of each.

d.   Explain the term sewer appurtenances. Why are sewer appurtenances necessary for a sewer line? Explain with neat sketches the working of any two sewer appurtenances that are usually provided on the sewer line.

e.   What do you understand by mass inflow curve and how it is prepared?

SECTION C

3. **Attempt any *one* part of the following:**   **10 x 1 = 10**

(a)   What do you understand by corrosion in pipes? What are the reasons of corrosion? What are the remedial measures?

(b)   Water has to be supplied to a town with 2 populations at the rate of 200 litres per capita per day from a river 2 km away. The difference in elevation between the lowest water level in the sump will and service reservoir is 40 m. determine the size of the main and the power of the pump required. Assume suitable data were required .(w = specific wt. of water in kg/m^3 = 9810)

4. **Attempt any *one* part of the following:**   **10 x 1 = 10**

(a)   Compare the merits and demerits of the 'continuous' and 'intermittent' systems of water supply. Under what conditions would you recommend the use of the latter? Write a note on the prevention of wastage of water in the distribution system.

(b)   What do you understand by an equivalent pipe? How do you determine its length when the pipes are
(i) in series
(ii) in parallel.

Paper Id: 100513   **Roll No:**

5.   **Attempt any** *one* **part of the following:**   **10 x 1 = 10**

   (a)   What do you understand by the terms self-cleansing velocity and limiting velocity in sewer?
   A stone-ware sewer, 30 cm in diameter is laid at a gradient of 1 in 100. Using N = 0.013 in manning's formula, calculate the velocity and discharge when sewer is running full.

   (b)   What do you mean by air pollution? Write the causes, effect and prevention of air population.

6.   **Attempt any** *one* **part of the following:**   **10 x 1 = 10**

   (a)   What is a service reservoir? Give its importance in a distribution system. Draw a neat sketch of an elevated tank.

   (b)   What is meant by 'water hammer' and how it is produced in pipes conveying water under pressure? What precautions should be taken and arrangements made to reduce its effects?

7.   **Attempt any** *one* **part of the following:**   **10 x 1 = 10**

   (a)   What do you mean by water demand? How will you estimate the quantity of water required by a town while arranging a water supply scheme for the same?

   (b)   What are infiltration galleries and infiltration wells? Explain both with neat sketch. And also draw a schematic diagram of wet intake towers and it's working.