Q.P. Code: 18CE0123 **R18**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech III Year II Semester Supplementary Examinations February-2022

ENVIRONMENTAL ENGINEERING

(Civil Engineering)

Time: 3 hours Max. Marks: 60

PART-A

(Answer all the Questions **5 x 2 = 10** Marks)

1 **a** List out various types of water demand. **2M**

b Write down any four drinking water quality standards. **2M**

c What are the two types of sewage system? **2M**

d State the purpose of using the skimming tanks **2M**

e List the methods of sludge disposal. **2M**

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2 **a** List out the various methods of population forecasting and explain any two methods in detail. **5M**

b Population of a town as obtained from the census reports is as below: Estimate the population of the town by 2020 & 2030 by Incremental Increase Method **5M**

Year	1980	1990	2000	2010
Population	55500	63700	71300	79500

OR

3 **a** What is per capita demand? Explain the factors affecting per capita demand. **5M**

b The populations of 5 decades from 1960 to 2000 are given below in table. Find out the Population 2010, 2020 & 2030 beyond the last known decade by Geometrical method. **5M**

Year	1960	1970	1980	1990	2000
Population	25000	28000	34000	42000	47000

UNIT-II

4 **a** Explain the principle of sedimentation giving equation of settling velocity of particles in water. **5M**

b What are the different methods of feeding coagulant in water treatment plant. **5M**

OR

5 **a** Compare slow sand filter with rapid sand filter. **5M**

b List the types of chlorination and explain break point chlorination in detail. **5M**

UNIT-III

6 A certain district of a city has a projected population of 80000 residing over an area of 70hectares. Find the design discharge for the sewer line, for the following data: **10M**

(i) Rate of water supply = 200 LPCD

(ii) Average impermeability coefficient for the entire area =0.3

(iii) Time of concentration = 50 minutes.

OR

7 A main combined sewer is to be designed to serve an area of 12 sq.km with a population density of 250 persons/hectare. The average rate of sewage flow is 250 LPCD. The maximum flow of 100% in excess of average together with the rainfall equivalent of 15 mmin 24 hours, all of which are runoff Determine the capacity of the sewer. Taking the maximum velocity of flow as 3 m/sec., determine the size of the circular sewer **10 M**

UNIT-IV

8 Define activated sludge process? And explain their operation including advantages and disadvantages. **10M**

OR

9 The sewage flows from a primary settling tank to a standard trickling filter at a rate of 5 MLD having a 5-day BOD of 150 mg/L. Determine the depth and the volume of the filter,adopting a surface loading of 2500 l/m2 /day and an organic loading of 165 g/m3 /day.Also, determine the efficiency of the filter unit, using NRC formula. **10 M**

UNIT-V

10 **a** Explain the process involved in self-purification. **5M**

b With the help of sketch, explain the gravity-sludge thickener **5M**

OR

11 **a** What is soak pit and why it is necessary? **5M**

b With neat sketch, explain the process of dispersion trench. **5M**

END