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B TECH (CARRY OVER)
(SEM I) THEORY EXAMINATION 2017-18
(Environmental Engineering 1)

Time: 3 Hours *Total Marks: 100*

Note: 1. Attempt all Sections. If any missing data is required, then choose suitably.

SECTION-A

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

a. Define design period ?
b. What is the domestic water demand?
c. Define the pipe materials.
d. Which type of pump is, commonly used hand pump?
e. Give the name of different types of sewers.
f. Define small bore sewer system ?
g. Define lapse rate ?
h. What is acid rain ?
i. What is the function of sluice gate ?
j. What do you understand by storm regulator?

SECTION-B

2. Attempt ant three of the following: **10 X 3=30**

a. What are various method of forecast the population growth in an area? Explain suitability of any four methods.
b. Differentiate between design of sewer pipes and water supply pipes.A city has population of 1,00,000 with a water supply rate of 170lpcd.Assuming 80% of water reaches the sewer, What will be the DWF in (m3/s)
c. Discuss the various methods for laying a water distribution network. Compare the advantages and disadvantages of continious and intermittant system of water supply scheme.
d. Explain the following sewer apppurtenances:-
(i) Manhole (ii) lamp hole (iii) inlet basin
e. (i)A stone ware sewer 30 CM diamerer is laid at a gradient 1 in 100. Using N=0.013 in Mannings co-efficent, Calculate the velocity and discharge where sewer is running half full.
(ii) Explain effects of air pollution in details.

SECTION-C

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

a. What are infilatration galleries and infiltration wells. Explain with neat sketches.

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

YEAR	1971	1981	1991	2001
POPULATION (IN THOUSAND)	242	345	770	1090

Estimate the population of the town in the year 2015 & 2021
(i) Arithmetic increase method
(ii) Geometric increase method
(iii) Incremental increase method

4. Attempt any two part of the following **5x2 =10**

a. Explain various types of joint used in water supply system.

b. A distribution resrervoir is to be designed for a locality of a town for 1200 persons. The average supply may be assumed 250 LPCD. The pattern of demand is as follows :

7 AM to 8AM ---------- 30% of day supply
8 AM to 5AM ---------- 35% of day supply
5 AM to 6.30AM ---------- 30% of day supply
6.30AM to 7AM ----------5% of day supply

The pumping is to be done at a constant rate of 8 hours per day (8.0AM to 4PM). Determine the capacity of reservoir.

c. Explain Water Hammer and its control measures.

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

(a) Write short notes on various methods used for analysis of complex pipe net works. Explain the Hardy cross method in detail.

(b) Discuss the importance of plumbing system in buildings.With the help of a neat digram , explain how municipal water mains are connected to private buildings and houses for giving water supply connections.

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

(a) Define the self- cleansing velocity in sewers.Derive an equation for self cleansing velocity generated in sewers

(b)Write short notes of following;
(i) Global warming (ii) various plume behaviour

7. **Attempt any two part of the following** **5 X 2 =10**

(a) Explain Newton Raphson method and equivalent pipe method of pipe network analysis.

(b) What is per capita supply? Discuss the basic needs and factors affecting the consumption of water in a city.

(c) Briefly explain layout and construction of sewer lines.