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Sub Code: NCE-503/ECE503

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B TECH (CARRY OVER)
(SEM V) 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 appurtenances:-
 (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-efficient, 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 infiltration 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 reservoir 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.