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B.Tech.

(SEM. V) THEORY EXAMINATION, 2015-16

ENVIRONMENTAL ENGINEERING-I

[Time:3 hours]   [MaximumMarks:100

Section-A

Q.1 Attempt all the parts.   (10×2=20)

(a) What are manholes?

(b) Which source or water contains maximum amount of turbidity?

(c) Which type of pump is, commonly used hand pump?

(d) What is the function of scour valve?

(e) What is permissible limit of nitrates in drinking water?

(f) Sewers are generally laid, starting from their .... point.

(g) Pumps are connected to be in .... to double the discharge and keep the head same.   •

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(h) What are the causes of temporary hardness?

(i) What percentage of total water demand contributes to losses in pipes?

(j) How much DO and BOD is desired in drinking water?

Section-B

Attempt any five Parts :   (10×5-50)

Q.2 Explain various types of joints used in water supply system.

Q.3 Explain effects of air pollution in detail.

Q.4 Differentiate between design of sewer pipes and water supply pipes. A city has a population of 1,00,000 with a water supply rate of 200 lpcd. Assuming 75% of water reaches the sewer, what will be the DWF in (m^3/s)?

Q.5 Write a short note on various plumbing fittings used in buildings and houses.

Q.6 The population of 5 decades from 1930 to 1970 are given. Find out the population after one, two and three decades beyond the last known decade by using arithmetic mean method.

Year	1930	1940	1950	1960	1970
Population	25,000	28,000	34,000	42,000	47,000

(2)   P.T.O

Q.7 What is self-cleanising velocity? What would be the design discharge of a 20 cm diameter sewer being laid at a slope of 0.004 and designed to carry discharge at a depth of 10 cm with Manings n=0.014.

Q.8 A combined sewer of circular section is to be designed for a city of population 1,00,000 and an area of 100 ha. The mean flow of the sewage from the city is 250 lpcd. The critical rainfall intensity is 4 cm/hr. Take Manings coefficient as 0.012. Determine the gradient of the sewer from Manings equation to carry a peak flow with a velocity of 1.2 m/s. Take k–0.48.

Q.9 What aer the types of sewerage system? Explain.

Section-C

Attempt any two parts : $(2 \times 15=30)$

Q.10 What is plume? Explain various plume behavior in detail with the help of neat sketches.

Q.11 Discuss various population forecasting methods in detail.

Q.12 Write short note on various methods used for analysis of complex pipe networks. Explain the Hardy Cross method in detail.

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