Code No: **19CET504**

R19

III B. TECH I SEMESTER REGULAR EXAMINATIONS, FEB - 2022
ENVIRONMENTAL ENGINEERING
(Civil Engineering)

Time: 3 Hours **Max. Marks: 60**

Note: Answer **ONE** question from each unit **(5 × 12 = 60 Marks)**

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UNIT-I

1. a) Explain the importance of protected water supply system. [4M]

   b) A town with population of 50,000 is to be supplied with 150lpcd of water. Calculate the capacity of service reservoir required, if pumping is done from 3AM to 9PM. Assume water is supplied during 6-9AM and 3-6PM. [8M]

(OR)

2. a) Discuss the factors which influence selection of design period. [3M]

   b) What are the various sources of water used in water supply schemes? Discuss their merits and demerits from quality and quantity point of view. [6M]

   c) Explain the factors to be considered in selection of a site for a river intake. [3M]

UNIT-II

3. a) Design a rectangular sedimentation tank to treat 6MLD of water. Assume suitable data wherever necessary. [6M]

   b) Discuss different methods of chlorination. [6M]

(OR)

4. a) Discuss the suitability of different coagulants used in water treatment mentioning their relative merits and demerits. [6M]

   b) Explain the merits and demerits of different layouts of water distribution networks. [6M]

UNIT-III

5. a) Estimate the Design peak flow of sewage and storm water flow in m^3/sec for the given conditions: Area: 3Sq-Km, Density of population: 250per Hectare. Per capita water supply: 120lpcd Assume suitable data. [6M]

   b) Discuss the methods of disposal of sewage on land. Explain about sewage sickness. [6M]

(OR)
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6.	a)	Define BOD and COD. Derive a mathematical expression for first order BOD.	[6M]
	b)	Write about DO sag curve.	[6M]

UNIT-IV

7.	a)	Name various sewer appurtenances. Describe a manhole with neat sketch.	[6M]
	b)	Explain in detail the design principles of a septic tank.	[6M]

(OR)

8.	a)	Design a primary sedimentation tank for a proposed sewage treatment plant of 20ML/d Capacity.	[6M]
	b)	Write about one pipe and two pipe systems of house drainage.	[6M]

UNIT-V

9.	a)	Explain the differences in aerobic and anaerobic treatment of sewage. Explain the working of oxidation pond.	[7M]
	b)	Determine the volume of aeration tank of Activated sludge process given the BOD of sewage as 250mg/L, MLSS-2750mg/L, and F/M-0.30 and sewage flow 5MLD	[5M]

(OR)

10.	a)	Discuss in detail three important modifications in activated sludge process with neat sketches	[6M]
	b)	Write short note on Anaerobic sludge digestion.	[6M]

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