



Paper id: 250625

Roll No:

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

**BTECH**  
**(SEM VI) THEORY EXAMINATION 2024-25**  
**ENVIRONMENTAL ENGINEERING**

**TIME: 3 HRS**

**M.MARKS: 70**

**Note:** Attempt all Sections. In case of any missing data; choose suitably.

**SECTION A**

**1. Attempt all questions in brief.**

**02 x 7 = 14**

Q no.	Question
a.	Define “freshwater resource” and name two major factors that influence domestic water consumption.
b.	What is SCADA? How is it used in water distribution monitoring?
c.	Define turbidity and mention its significance in water quality assessment.
d.	What is coagulation in water treatment? Give one common coagulant.
e.	Explain aerobic decomposition.
f.	What is Theoretical Oxygen demand?
g.	What is coincident draft?

**SECTION B**

**2. Attempt any three of the following:**

**07 x 3 = 21**

a.	Describe any two methods of population forecasting for water demand estimation, with examples.
b.	Explain the design considerations and layout of service reservoirs in a water distribution system.
c.	Discuss the environmental impact of wastewater disposal on land and water bodies. What are the indicators of contamination?
d.	Describe the operations of sedimentation and filtration used in water treatment, with sketches.
e.	Describe the activated sludge process with a flow diagram. What are its operational challenges?

**SECTION C**

**3. Attempt any one part of the following:**

**07 x 1 = 07**

a.	Evaluate three different methods for detecting and controlling leakage in aged distribution mains, comparing their effectiveness, cost, and operational challenges.
b.	Given a town whose population grew from 50 000 to 60 000 over ten years, apply both arithmetic and geometric methods to forecast its population after the next ten years, and comment on which is more appropriate under rapid urbanization.

**4. Attempt any one part of the following:**

**07 x 1 = 07**

a.	What are various methods of layout of distribution system? Describe the design and layout features of any two. Highlight their advantages and limitations.
b.	How does GIS enhance water distribution network analysis? Provide an example.

**5. Attempt any one part of the following:**

**07 x 1 = 07**

a.	Explain the importance of pH, turbidity, BOD, COD, TDS, heavy metals, and nutrients.
b.	A wastewater sample has an initial DO of 8 mg/L and a final DO of 2 mg/L after 5



Paper id: 250625

Printed Page: 2 of 2  
Subject Code: BCE603

Roll No:

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

**BTECH**  
**(SEM VI) THEORY EXAMINATION 2024-25**  
**ENVIRONMENTAL ENGINEERING**

**TIME: 3 HRS**

**M.MARKS: 70**

	days. If the sample dilution is 1:50, calculate the BODs.
<b>6.</b>	<b>Attempt any <i>one</i> part of the following:</b> <span style="float: right;"><b>07 x 1 = 07</b></span>
a.	Design a rapid sand filter for a given raw water flow rate of 100 m <sup>3</sup> /hr; include layout and sizing.
b.	Explain various disinfection techniques. Discuss their advantages and limitations.
<b>7.</b>	<b>Attempt any <i>one</i> part of the following:</b> <span style="float: right;"><b>07 x 1 = 07</b></span>
a.	Sketch and describe the working principle of an Up flow Anaerobic Sludge Blanket (UASB) reactor.
b.	Explain the design and application of constructed wetlands for tertiary wastewater treatment.

QP25EP1\_290  
| 02-Jun-2025 1:55:59 PM | 117.55.242.134