

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(END SEMESTER EXAMINATION)**

**CLASS: B.Tech/BHMCT  
BRANCH: CHEMICAL/MECH/HMCT**

**SEMESTER : V/VII  
SESSION : MO/2023**

**SUBJECT: BE320 BIOTREATMENT OF MUNICIPAL & INDUSTRIAL WASTE**

**TIME: 3 Hours**

**FULL MARKS: 50**

**INSTRUCTIONS:**

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
  2. Attempt all questions.
  3. The missing data, if any, may be assumed suitably.
  4. Before attempting the question paper, be sure that you have got the correct question paper.
  5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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		CO	BL
Q.1(a)	What do you mean by urban wastewater management system? Mention need of it and propose a design for wastewater management system for BIT Mesra campus.	[5] 3	6
Q.1(b)	Calculate BOD <sub>5</sub> , if 10 mL wastewater sample was diluted to 300mL before incubation by using standard seeded water. Initial DO level was 8.1mg/L. It was incubated in a BOD incubator for 5days, after 5days incubation at 27°C, DO level was found to be at 2.5mg/L.	[5] 4	4
Q.2(a)	Corelate the wastewater treatment system processes included as primary, secondary and tertiary.	[5] 4	4
Q.2(b)	Explain the need of unit operations in preliminary treatment in municipal wastewater system. Also, substantiate your answer by showing the application of screens for the same.	[5] 3	3
Q.3(a)	What is activated sludge? Construction the suspended growth activated sludge treatment system and explain its working.	[5] 5	6
Q.3(b)	Construction a upflow activated sludge blanket reactor for municipal wastewater reclamation. Also, describe its functioning.	[5] 5	6
Q.4(a)	Judge the need of tertiary wastewater treatment system.	[5] 3	6
Q.4(b)	List the various disinfection agents used for treatment of wastewater effluents coming after secondary treatment. Apply chlorination and dichlorination processes to achieve disinfection.	[5] 3	3
Q.5(a)	Give your plan to dispose the solid wastes for a city with population of one crore.	[5] 2	6
Q.5(b)	Implement the basic concept of composting to dispose solid sludge obtained from municipal wastewater treatment plant. How does the produced compost is decontaminated.	[5] 2	3

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