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Printed Page:-4 **Subject Code:- ABT0711**

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA
(An Autonomous Institute Affiliated to AKTU, Lucknow)
B.Tech
SEM: VII - THEORY EXAMINATION (2025 - 2026)
Subject: Waste management and Upscaling

Time: 3 Hours **Max. Marks: 100**

General Instructions:

IMP: *Verify that you have received the question paper with the correct course, code, branch etc.*

1. *This Question paper comprises of* ***three Sections -A, B, & C.*** *It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.*

2. *Maximum marks for each question are indicated on right -hand side of each question.*

3. *Illustrate your answers with neat sketches wherever necessary.*

4. *Assume suitable data if necessary.*

5. *Preferably, write the answers in sequential order.*

6. *No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.*

SECTION-A 20

1. Attempt all parts:-

1-a. What are the consequences of non-compliance with EU waste legislation? (CO1, K2) 1

(a) Fines and penalties
(b) Suspension of business operations
(c) Loss of EU funding
(d) All of the above

1-b. Which of the following is a secondary treatment process in an Effluent Treatment Plant? (CO1, K2) 1

(a) Coagulation
(b) Filtration
(c) Membrane bioreactor (MBR)
(d) pH adjustment

1-c. Why is Recycled Paper Banned for Usage in Food Containers? (CO2, K2) 1

(a) Because paper is used only one time
(b) Because it creates contamination
(c) Because the paper is very thick and it cannot cover the food containers
(d) Because it creates a lot of spaces

1-d. Which of the Following Ones Is the Simplest and Most Common Method Used in the Cities to Dump the Wastes That Are Collected? (CO2, K2) 1

(a) River
(b) Ocean
(c) Landfill

(d) None of the above

1-e. Which of the following is a cutting-edge technology for recycling used batteries? (CO3, K2) 1

(a) Landfilling
(b) Electrolysis
(c) Reverse osmosis
(d) Incineration

1-f. Which of the following types of landfill is designed to safely dispose of hazardous waste? (CO3, K2) 1

(a) Sanitary landfill
(b) Municipal landfill
(c) Hazardous waste landfill
(d) Open dump

1-g. What is the primary purpose of waste-to-energy (WTE) facilities in sustainable waste management? (CO4, K2) 1

(a) Recycling plastic waste
(b) Reducing waste volume through incineration
(c) Landfilling hazardous waste
(d) Exporting waste to other countries

1-h. What is the primary greenhouse gas associated with carbon footprinting? (CO4, K2) 1

(a) Oxygen
(b) Nitrogen
(c) Carbon dioxide
(d) Hydrogen

1-i. Which industry often utilizes waste upcycling to analyze new fashion products? (CO5, K4) 1

(a) Automotive
(b) Electronics
(c) Textiles
(d) Agriculture

1-j. What is "precycling" in the context of waste management? (CO5, K2) 1

(a) A type of waste disposal method
(b) Purchasing products with minimal packaging to reduce waste
(c) Converting waste into new products
(d) Collecting and storing waste for future use

2. Attempt all parts:-

2.a. What are the potential consequences of mixing different types of waste together? (CO1, K2) 2

2.b. What are the environmental concerns associated with waste incineration? (CO2, K2) 2

2.c. Why is the management of landfill leachate important? (CO3, K4) 2

2.d.	What is lifecycle analysis? (CO4, K2)	2
2.e.	How can individuals contribute to waste upcycling efforts? (CO5, K2)	2

SECTION-B 30

3. Attempt all parts:-

3.a. Answer any one of the following:-

3.a.(i)	How do industrial emissions contribute to air pollution and climate change? (CO1, K4)	6
3.a.(ii)	Analyze monitoring and control systems in the treatment and discharge of industrial emissions. (CO1, K4)	6

3.b. Answer any one of the following:-

3.b.(i)	Evaluate how does energy from waste contribute to reducing greenhouse gas emissions and combating climate change? (CO2, K5)	6
3.b.(ii)	Analyze the measures taken to ensure the safe and responsible operation of waste incineration plants, particularly regarding emissions and ash management? (CO2, K4)	6

3.c. Answer any one of the following:-

3.c.(i)	Apply the transformation of waste materials into valuable products through recycling and recovery processes? (CO3, K3)	6
3.c.(ii)	Explain the process of landfill design, from site selection to construction to be applied for a biofuel industry. (CO3, K3)	6

3.d. Answer any one of the following:-

3.d.(i)	How does multi-criteria analysis contribute to decision support in a waste management industry? (CO4, K3)	6
3.d.(ii)	Analyze the major sources of carbon emissions globally and their impact on the environment. (CO4, K4)	6

3.e. Answer any one of the following:-

3.e.(i)	How can governments, businesses, and individuals collaborate to promote and support waste upcycling initiatives on a larger scale? (CO5,K2)	6
3.e.(ii)	Differentiate between waste upcycling and waste down cycling. (CO5, K4)	6

SECTION-C 50

4. Answer any one of the following:-

4-a.	Explain the concept of the waste hierarchy in waste management to evaluate the biorefinery performance. (CO1, K5)	10
4-b.	Explain the term "point source emissions" in the context of industrial pollution. (CO1, K2)	10

5. Answer any one of the following:-

5-a.	How does gasification compare to other waste management and energy conversion technologies, such as incineration or anaerobic digestion? (CO2, K4)	10
5-b.	How long does it typically take for different types of waste to analyze and undergo anaerobic digestion, and are there any factors that can affect the digestion time? (CO2, K4)	10

6. Answer any one of the following:-

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6-a.	What are the advanced treatment technologies available for landfill leachate, and how do they compare to conventional treatment methods? (CO3, K4)	10
6-b.	Discuss the importance of public awareness and education regarding health considerations in waste recycling, and how it can be applied to better waste management practices? (CO3, K3)	10

7. Answer any one of the following:-

7-a.	Provide an example of a product or industry where lifecycle analysis has been applied successfully. Discuss the findings and implications of the study. (CO4, K3)	10
7-b.	Discuss the economic implications of poor waste management in global cities and developing countries? (CO4, K2)	10

8. Answer any one of the following:-

8-a.	How Smart Tech Is Changing the Future of Waste Management? Discuss its importance and implications (CO5, K2)	10
8-b.	How does waste downcycling impact the environment compared to other waste management methods? (CO5, K2)	10