Printed Page:- Subject Code:- ABT0404

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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: IV - THEORY EXAMINATION (2021 - 2022)

Subject: Green Biotechnology and Pollution Abetment

Time: 3 Hours Max. Marks: 100

General Instructions:

1. The question paper comprises three sections, A, B, and C. You are expected to answer them as directed.
2. Section A - Question No- 1 is 1 mark each & Question No- 2 carries 2 mark each.
3. Section B - Question No-3 is based on external choice carrying 6 marks each.
4. Section C - Questions No. 4-8 are within unit choice questions carrying 10 marks each.
5. 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. Which of the following is a substrate for biogas production? (CO1) 1

(a) Municipal and residential waste

(b) E-waste

(c) Metallic waste

(d) Gaseous effluents

1-b. What is true about aerobic bacteria? (CO1) 1

(a) fluorish in the presence of free oxygen

(b) consume organic matter as their food

(c) oxidise organic matter in sewage

(d) All of the above

1-c. What are xenobiotics? (CO2) 1

(a) Another form of antibiotics

(b) A form of nutrient

(c) Nutrients which kill the gut harmful microbes

(d) Anything that is not nutrients and enters the body through different routes

1-d. Heavy metal ions are known to be very_____? (CO2) 1

(a) Carcinogenic

(b) non toxic

(c) toxic

(d) both a and c

1-e. What is biotransformation? (CO3) 1

(a) The metabolic conversion of endogenous and xenobiotic chemicals to more polar, water-soluble compounds.

(b) The metabolic conversion of endogenous and xenobiotic chemicals to more non-polar compounds.

(c) Biotransformation leads to an increase in the concentration of the original compound.

(d))Biotransformation leads to a decrease in the concentration of the original compound, due to storage in the fat tissue of the body.

1-f. An enzyme that joins the ends of two strands of nucleic acid is: (CO3) 1

(a) Polymerase

(b) ligase

(c) synthetase
(d) Helicase

1-g. The bioremediation process involving the usage of plants to degrade pollutants is (CO4) 1

(a) Composting
(b) Bio pile
(c) Phytoremediation
(d) Land farming

1-h. The symbiotic relationship between fungi and roots of higher plants is called (CO4) 1

(a) lichen
(b) Mycorrhiza
(c) Helotism
(d) mutualism

1-i. Biodiesel is produced from oils or fats using (CO5) 1

(a) fermentation
(b) transesterification
(c) distillation
(d) none of the above

1-j. The term biomass most often refers to _____ (CO5) 1

(a) Inorganic matter
(b) organic matter
(c) Chemicals
(d) Ammonium compounds

2. Attempt all parts:-

2.a. What are the different types of biological waste? (CO1) 2

2.b. Define biomagnification? (CO2) 2

2.c. What are whole cell systems? (CO3) 2

2.d. What are the different conditions that microbes required to accelerate the bioremediation process? (CO4) 2

2.e. What are sustainable bioproducts? (CO5) 2

SECTION B 30

3. Answer any five of the following:-

3-a. What are the advantages and disadvantages of activated sludge process? (CO1) 6

3-b. Discuss about the process of biogas production in detail? (CO1) 6

3-c. Discuss in detail about the xenobiotic compounds? (CO2) 6

3-d. What do you understand by microbial degradation of hydrocarbons? Discuss? (CO2) 6

3.e. Discuss about biocatalysts in detail? (CO3) 6

3.f. Discuss in detail about phytoremediation process? (CO4) 6

3.g. Discuss briefly about sustainable bioproducts? (CO5) 6

SECTION C 50

4. Answer any one of the following:-

4-a. Give a detailed view of trickling filters? (CO1) 10

4-b. Write an essay on environmental pollution and their impact on human health? (CO1) 10

5. Answer any one of the following:-

5-a. Discuss briefly about the different factors that effect the rate of biodegradation of organic compounds? (CO2) 10

5-b.	Discuss about the process of co-metabolism in detail? (CO2)	10
6. Answer any one of the following:-		
6-a.	Explain in detail how the reaction is catalyzed by an enzyme? (CO3)	10
6-b.	Discuss briefly some of the biocatalytic applications? (CO3)	10
7. Answer any one of the following:-		
7	Differentiate between in situ and ex situ bioremediation? (CO4)	10
7	Illustrate the use of mycorrhizae in reforestation process? (CO4)	10
8. Answer any one of the following:-		
8-a.	Diagrammatically explain biosensors in detail? (CO5)	10
8-b.	Explain in detail about the current status of biotechnology in environment protection? (CO5)	10