Printed Page:- Subject Code:- ABT0201

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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: II - THEORY EXAMINATION (2021 - 2022)

Subject: Introduction to Biotechnology

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 marker & Question No- 2 carries 2 marks 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. What is the basic functional and structural unit of life? CO1 1

(a) tissue

(b) cell

(c) organism

(d) None of the above

1-b. Animal cell lack ------- and --------. CO1 1

(a) Cell wall and Plastids

(b) Peptide

(c) Nucleotide

(d) Nucleoid

1-c. Most protists are: CO2 1

(a) Aquatic.

(b) Terrestrial.

(c) Aerial.

(d) None.

1-d. The second meiotic division is very similar to-------. CO2 1

(a) Mitosis

(b) Chromomere

(c) Diplotene

(d) Chiasmata

1-e. Ribosomes are composed of rRNA and what is the other component? CO3 1

(a) Protein

(b) Carbohydrates

(c) DNA

(d) mRNA

1-f. Who discovered DNA polymerase------- . CO3 1

(a) Korenberg

(b) m-RNA

(c) Splicing

(d) House keeping genes

1-g. Which of the following cells of the immune system do not perform phagocytosis? CO4 1

(a) Macrophage

(b) Neutrophil

(c) Eosinophil

(d) Basophil

1-h. An autoimmune disease is -------- . CO4 1

(a) Myasthena gravis

(b) Plasma cells

(c) Have 3 main types-cytotoxic, helper and supressor

(d) Cellular barriers

1-i. The trigger for activation of toxin of Bacillus thuringiensis is: CO5 1

(a) Acidic pH of stomach

(b) High temperature

(c) Alkaline pH of gut

(d) Mechanical action in the insect gut

1-j. Hirudin is . CO5 1

(a) Protein from Hordeum valgare

(b) Toxic molecules from Gossypium

(c) Protein from transgenic Brassica napus

(d) Antibiotic from GM Escherichia

2. Attempt all parts:-

2.a.	What is the main function of the chloroplast in a plant cell? CO1	2
2.b.	What is the significance of meiosis? CO2	2
2.c.	What is a "codon"? CO3	2
2.d.	What is interferon? CO4	2
2.e.	For which variety of Indian rice, the patent was filed by a USA Company? CO5	2

SECTION B 30

3. Answer any five of the following:-

3-a.	What is meant by tertiary structure of proteins? CO1	6
3-b.	What is bioenergetics? State the first law of thermodynamics? CO1	6
3-c.	Briefly discuss the Contributions of Louis Pasteur? CO2	6
3-d.	What is a prokaryotic cell? Differentiate a prokaryotic cell from a eukaryotic cell. CO2	6
3.e.	How do histones acquire positive charge? CO3	6
3.f.	How does the immune system fight disease? CO4	6
3.g.	Discuss briefly how a probe is used in molecular diagnostics. CO5	6

SECTION C 50

4. Answer any one of the following:-

4-a.	Draw the structure of primary, secondary, tertiary and quaternary structure of proteins? CO1	10
4-b.	Describe the ultra structure of biomembrane ? CO1	10

5. Answer any one of the following:-

5-a.	Discuss the process of reproduction in kingdom fungi? CO2	10
5-b.	Describe somatic cell division and mention its significance? CO2	10

6. Answer any one of the following:-

6-a.	Briefly describe the following: (a) Transcription (b) Translation. CO3	10
6-b.	Define auxotroph. How many types of auxotroph did Bedal and Tatum prepare? What did their experiment establish and how is it accepted today? CO3	10

7. Answer any one of the following:-

7-a.	Explain the response initiated when a dose of vaccine is introduced into the human body? CO4	10
7-b.	Write down the difference between primary lymphoid organs and secondary lymphoid organs with suitable example? CO4	10

8. Answer any one of the following:-

8-a.	Explain the term GMO. Differentiate between GMO and hybrid. CO5	10
8-b.	List the disadvantages of insulin obtained from the pancreas of slaughtered cows and pigs. CO5	10