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 - CARRY OVER THEORY EXAMINATION - SEPTEMBER 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. A single molecule of glucose generates _____ molecules of acetyl CoA, which enters the Krebs cycle. (CO1) 1

(a) 4

(b) 3

(c) 2

(d) 1

1-b. Krebs cycle occurs in aerobic respiration due to (CO1) 1

(a) Electron transport chain requires aerobic conditions to operate

(b) Oxygen is a reactant

(c) Oxygen has a catalytic function

(d) All of the above

1-c. Which of the following organisms can be found in extreme saline conditions? (CO2) 1

(a) Eubacteria

(b) Archaebacteria

(c) Cyanobacteria

(d) Mycobacterium

1-d. Blue-green algae belong to which group? (CO2) 1

(a) Protista

(b) Prokaryotes

(c) Fungi

(d) Bryophytes

1-e. Which of the following is not found within DNA (CO3) 1

(a) thymine

(b) phosphodiester bonds

(c) complementary base pairing

(d) amino acids

1-f. If a DNA strand contains the sequence 5′-ATTCCGGATCGA-3′, which of the following is the sequence of the complementary strand of DNA? (CO3) 1

(a) 5′-TAAGGCCTAGCT-3′

(b) 5′-ATTCCGGATCGA-3′

(c) 3′-TAACCGGTACGT-5′

(d) 5′-TCGATCCGGAAT-3′

1-g. Which of the following systems protects our body against disease-causing microbes? (CO4) 1

(a) Immune system

(b) Digestive system

(c) Excretory system

(d) Respiratory system

1-h. B-cells and T-cells are two types of cells involved in (CO4) 1

(a) Innate Immunity

(b) Active immunity

(c) Passive immunity

(d) Acquired immunity

1-i. Bt cotton is not: (CO5) 1

(a) A GM plant

(b) Insect resistant

(c) A bacterial gene expressing system.

(d) Resistant to all pesticides

1-j. Choose the correct option regarding Retrovirus: (CO5) 1

(a) An RNA virus that can synthesize DNA during infection

(b) A DNA virus that can synthesize RNA during infection

(c) A ss DNA virus

(d) A dsRNA virus

2. Attempt all parts:-

2.a. How do prokaryotes and eukaryotes resemble with each other? (CO1) 2

2.b. What do you understand the term mycobiont? (CO2) 2

2.c. Retroviruses do not follow central dogma. Comment on this statement (CO3) 2

2.d. State two different roles of spleen in the human body? (CO4) 2

2.e. What is Flavr Savr? (CO5) 2

SECTION B 30

3. Answer any five of the following:-

3-a. Briefly describe the electron transport system? (CO1) 6

3-b. Write down the significance of glycolysis reaction? (CO1) 6

3-c. What are the characteristic features of euglenoids? (CO2) 6

3-d. Write a short note on Lichens. (CO2) 6

3.e. Describe the structure and functions of different types of RNA? (CO3) 6

3.f. What is Immune system? Mention the two types of the immune system. (CO4) 6

3.g. List three critical research areas of biotechnology. (CO5) 6

SECTION C 50

4. Answer any one of the following:-

4-a. What are carbohydrates? Give the properties of monosaccharides and oligosaccharides? (CO1) 10

4-b. What are lipids? Differentiate among the simple, compound and derived lipids? Discuss the importance and functions of lipids? (CO1) 10

5. Answer any one of the following:-

5-a. Write down the salient features of viruses, viroids and mycoplasmas? (CO2) 10

5-b. Write down the important characteristics of fungi? Compare the different types of fruiting bodies in fungi? (CO2) 10

6. Answer any one of the following:-

6-a.	Explain the different steps of protein synthesis? (CO3)	10
6-b.	Discuss the process of transcription in detail. Give an account of post transcriptional modifications of a eukaryotic mRNA.(CO3)	10

7. Answer any one of the following:-

7-a.	Discuss the Human immune system under the following headings--- (i) lymphoid organs (ii) immune cells (iii) soluble molecules like antibodies. (CO4)	10
7-b.	Write short notes on vaccination and immunization? (CO4)	10

8. Answer any one of the following:-

8	Why are transgenic animals so called? Explain the role of transgenic animals in (a) vaccine safety (b) biological products with the help of an example for each. (CO5)	10
8	Compare and contrast the advantages and disadvantages of production of GM crops? (CO5)	10