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**Printed Page:-4** **Subject Code:- CBT0103**

**Roll. No:**

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**NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA**
**(An Autonomous Institute Affiliated to AKTU, Lucknow)**
**B.Tech**
**SEM: I - THEORY EXAMINATION (2025 - 2026)**
**Subject: Remedial Biology**

**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.*

REG_JULY_DEC_2025

**SECTION-A** 20

1. Attempt all parts:-

1-a. Protoplasm found inside the nucleus is known as (CO1, K1) 1

(a) Cytoplasm
(b) Nucleoplasm
(c) Amyloplasm
(d) Elaioplast

1-b. Walls of young cell in plants are mainly composed of (CO1, K1) 1

(a) Cellulose
(b) Starch
(c) Glycogen
(d) Protein

1-c. Which of the following organisms can be found in extreme saline CO2, K1) 1

(a) Eubacteria
(b) Archaebacteria
(c) Cyanobacteria
(d) Mycobacterium

1-d. . Linnaeus used which kingdom of classification?(CO2,K1) 1

(a) Artificial system
(b) Natural system
(c) Phylogenetic system
(d) Asexual system

1-e. These tissues are made up of actively dividing cells. (CO3, K2) 1

(a) Meristematic cell
(b) Bark
(c) Permanent tissue
(d) Phloem

1-f. White adipose tissue contains_____(CO3, K1) 1

(a) Multilocular fat cells
(b) Bilocular fat cells
(c) Unilocular fat cells
(d) alocular fat cells

1-g. The division of cytoplasm is known as (CO4, K1) 1

(a) Cytokinesis
(b) Karykinesis
(c) Prophase
(d) Metaphase

1-h. The stage in which chromosomes align on the equator of spindle fiber is (CO4, K1) 1

(a) Prophase
(b) Metaphase
(c) Anaphase
(d) Telophase

1-i. The first step in photosynthesis is (CO5, K1) 1

(a) joining of three carbon atoms to form glucose
(b) formation of ATP
(c) ionization of water
(d) excitement of an electron of chlorophyll a by a photon of light

1-j. Dark reaction in photosynthesis is called so because (CO5,K1) 1

(a) it can also occur in dark
(b) it does not require light energy
(c) neither of these
(d) both of these

2. Attempt all parts:-

2.a. Why are mitochondria known as the “powerhouse of the cell”?(CO1,K1) 2

2.b. What structure is a key focus in plant classification but generally absent in animal? (CO2, K1) 2

2.c. What is the main function of the plant root? (CO3, K1) 2

2.d. What is a gene and an allele?CO 4, K1) 2

2.e. Write short notes on cyclic and non-cyclic photophosphorylation? (CO5, K1) 2

**SECTION-B** 30

3. Attempt all parts:-

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

3.a.(i) Discuss the primary,secondary,tertiary and quaternary structure of protein? (CO1, 6

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K2)

| | | |
|---|---|---|
| 3.a.(ii) | Discuss inorganic catalysts and enzymes? Discuss the properties of enzymes? (CO1,K2) | 6 |

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

| | | |
|---|---|---|
| 3.b.(i) | Who proposed the five kingdoms of classification?Discuss the salient features of kingdom of Monera, Protista and Fungi? (CO2, K2) | 6 |
| 3.b.(ii) | Discuss the salient features of Lichens? (CO2, K2) | 6 |

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

| | | |
|---|---|---|
| 3.c.(i) | Discuss different types of phyllotaxy with suitable examples. (CO3, K2) | 6 |
| 3.c.(ii) | Describe the modifications of the stem. Give examples for the same. ? (CO3, K2) | 6 |

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

| | | |
|---|---|---|
| 3.d.(i) | Explain the significance of mitotic cell division and meiotic cell division? (CO4, K2) | 6 |
| 3.d.(ii) | Explain G1, G2, S phase of cell cycle? (CO4, K2) | 6 |

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

| | | |
|---|---|---|
| 3.e.(i) | Define the term osmosis and diffusion? What role does osmosis play in the process of water uptake by plant (CO5, K1) | 6 |
| 3.e.(ii) | Differentiate between Apoplast and Symplast pathways of water movement. Which of these would need active transport? (CO5, K2) | 6 |

**SECTION-C** 50

4. Answer any one of the following:-

| | | |
|---|---|---|
| 4-a. | Describe the ultra-structure of Golgi complex and mitochondria? Discuss the various functions od Golgi complex and mitochondria? (CO1, K2) | 10 |
| 4-b. | Draw the diagram of prokaryotic cell and eukaryotic cell? (CO1, K1) | 10 |

5. Answer any one of the following:-

| | | |
|---|---|---|
| 5-a. | Describe the salient features of Kingdom Monera and fungi including their cell structure and mode of nutrition? (CO2, K2) | 10 |
| 5-b. | Describe the three major functional groupings within Kingdom Protista and provide an example of each? (CO2, K2) | 10 |

6. Answer any one of the following:-

| | | |
|---|---|---|
| 6-a. | Explain the different types of phyllotaxy. Give one example of each type. (CO3, K2) | 10 |
| 6-b. | What is a flower? Describe the parts of typical angiosperm plants with the help of a diagram. (CO3, K1) | 10 |

7. Answer any one of the following:-

| | | |
|---|---|---|
| 7-a. | Discuss Mendel's law of segregation in detail. Explain the concept of alleles, homozygous and heterozygous individuals, and the segregation of alleles during gamete formation? (CO4, K2) | 10 |
| 7-b. | Explain Mendel's law of independent assortment. Discuss how the law applies to the inheritance of two or more genes located on different chromosomes? (CO4, K2) | 10 |

8. Answer any one of the following:-

REG_JULY_DEC_2025

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|---|---|---|
| 8-a. | Discuss the Kreb cycle and Calvin cycle? (CO5, K2) | 10 |
| 8-b. | Name five major classes of plant growth regulators (hormones) and specify one primary role for each.? (CO5, K1) | 10 |

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