BIOLOGY
(BIOT 2105)

Time Allotted : 3 hrs **Full Marks : 70**

Figures out of the right margin indicate full marks.

Candidates are required to answer Group A and any 5 (five) from Group B to E, taking at least one from each group.

Candidates are required to give answer in their own words as far as practicable.

Group – A
(Multiple Choice Type Questions)

1. Choose the correct alternative for the following: **10 × 1 = 10**

(i) Nucleotides are
(a) Building blocks of DNA
(b) Building blocks of RNA
(c) Building blocks of both DNA and RNA
(d) None of these

(ii) Purines and pyrimidines are two types of
(a) Nucleotides (b) Ribose sugars
(c) Nucleosides (d) Nitrogenous bases of DNA

(iii) Phase of cell cycle where DNA synthesis takes place
(a) G_1 (b) G_2
(c) S (d) M

(iv) Gregor Johan Mendel performed hybridization experiments with
(a) Garden pea plant (b) Tomato plant
(c) Arabidopsis thaliana (d) none of these

(v) Which of the following is not correct?
(a) Robert Brown discovered cell
(b) Schleiden and Schwann formulated cell theory
(c) Virchow explained that cells are formed from pre-existing cells
(d) A unicellular organism carries out all its life activities within a single cell

(vi) What is the nature of an enzyme?
(a) Vitamin (b) Lipid
(c) Carbohydrate (d) Protein

(vii) Name the enzyme which catalyzes the oxidation-reduction reaction.
(a) Transaminase (b) Glutamine synthetase
(c) Phosphofructokinase (d) Oxidoreductase

(viii) In bacteria, the restriction phenomenon occurs naturally as
(a) Bacteria produces enzyme (b) For survival
(c) For efficient cloning (d) Destruction of DNA of bacteria

(ix) _____ is not generally seen in biodiversity hotspots
(a) Endemism (b) Species richness
(c) Loss of diversity (d) Lesser interspecific competition

(x) Hotspot areas have
(a) Low density of biodiversity (b) Only endangered plants
(c) High density of hot springs (d) High density of biodiversity

Group – B

2. (a) Who proposed cell theory? State the cell theory.

(b) Describe the structure and function of ribosome.

(1 + 5) + 6 = 12

3. (a) What are the different types of nitrogenous bases present in nucleic acids? Describe their structures.

(b) What is transcription? What are its different stages?

(3 + 3) + (3 + 3) = 12

Group – C

4. (a) Define carbohydrates.

(b) Briefly describe the types of polysaccharide based on their composition with examples each type.

(c) Mention the function of carbohydrates.

2 + (4 + 2) + 4 = 12

5. (a) Describe the category of fatty acids with one example of each.

(b) Define essential amino acid and cite example of any two.

(c) Describe why protein is needed for our body.

(4 + 2) + (2 + 2) + 2 = 12

Group – D

6. (a) Discuss the mechanism of enzyme action.

(b) Classify enzymes based on mode of action along with examples of each.

(c) State how different factors affect enzyme activity.

4 + 4 + 4 = 12

7. (a) Distinguish between Type-I and Type-II restriction enzymes.

(b) What do you mean by a Pallindromic sequence? Give an example.

(c) Write a brief note on the commercial importance of enzymes.

4 + (3 + 1) + 4 = 12

Group – E

8. (a) Comment on the social and economic benefits of biodiversity.

(b) Discuss the different types of threats towards biodiversity.

(c) Mention the different biodiversity conservation methods

4 + 4 + 4 = 12

9. (a) What are the characteristics of a Biosensor? What are the characteristics of a non-invasive biosensor?

(b) What do you mean by Wearable biosensor? Mention any two Wearable biosensors.

(3 + 4) + (3 + 2) = 12

Department & Section	Submission Link
CE	https://classroom.google.com/c/MjQyMDY2NTcyNzE4/a/MjkyNTAwNTI2MDYx/details
CHE	https://classroom.google.com/c/MjQyMDU4ODMyOTA4/a/Mjg3MDUwOTk1MTA1/details
EE	https://classroom.google.com/c/MjQyMDY2MTYyMzk5/a/Mjg3MDQ4MTkxNjUy/details
ME Sec A	https://classroom.google.com/c/MTQ0MTk2MTk1NTMx/a/MjkyNDk2OTcwNzY5/details
ME Sec B	https://classroom.google.com/c/MTUzNzM0OTMwNTI4/a/MjkyNDk2OTcwODY0/details