



THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions: (15x2=30)

- i. Define ATP and its role in cellular energy transfer.
- ii. Explain the purpose of crossing over during meiosis.
- iii. What is a genetically modified organism (GMO), and why are they created?
- iv. Name a terrestrial invertebrate and its habitat.
- v. Differentiate between sex chromosomes and autosomes.
- vi. Explain the structure and function of cell membranes.
- vii. Differentiate between gene and allele.
- viii. Define genetic recombination and its importance in inheritance.
- ix. What is genetic engineering, and give an example of its application?
- x. Give an example of a prion-related disease and its effects.
- xi. How do autotrophs obtain energy, and what's the process involved?
- xii. What is the significance of the electron transport chain in metabolism?
- xiii. What is a phenotype, and how does it relate to genotype?
- xiv. What is central dogma?
- xv. Write the quaternary structure of proteins.

Q.2. Answer the following questions:

- i. (a) Give the structure and function of DNA. (6)
(b) How metabolism plays a crucial role in energy acquisition and utilization within cells. (4)
- ii. Explain structure and function of mitochondria. (10)
- iii. (a) Discuss in detail the α -Helix and β -pleated sheets. (6)
(b) Discuss the three levels of biodiversity with its contribute to the stability of ecosystems. (4)