

(d) Intron and Exon

(e) Monophyletic and Polyphyletic groups (10)

(iii) Name the scientists for the following contributions :

(a) Laws of inheritance

(b) Binomial nomenclature

(c) DNA double helix

(d) Theory of Natural selection (2)

(iv) Give reason(s) as to why are the following statements **not** correct ?

(a) Protein retains its native conformation on heating.

(b) *E. coli* is not the model organism for prokaryotes.

(c) Cellulose is digestible in human digestive tract.

(d) Lipids are not hydrophobic molecules.

(e) The DNA element is confined to nucleus in bacteria. (5)

(v) Give one-word answer for the following :

(a) The bonds that are broken when water vaporizes.

(b) Hydrogen ion concentration of a solution having pH=4.

(c) Sugar present in milk.

(d) Tendency of water molecules to stay close to each other as a result of hydrogen bonding.

(e) Amount of heat required to convert 1g of any substance from the liquid to the gaseous state.

- (f) Process of synthesis of RNA from DNA.
 - (g) Molecules that are mirror images of each other.
 - (h) Functional groups present in amino acids.
 - (i) Disease caused due to deposition of fat in blood vessels.
 - (j) Archaeans inhabiting the extremely hot conditions. (5)
2. What is reproductive isolation ? Discuss the different types of isolating mechanisms operating in biological species. (12)
3. (a) Write the role of proteins in transport and defence mechanisms with suitable examples. (6)
- (b) Distinguish between saturated and unsaturated fats and mention their biological functions. (6)
4. (a) State the different types of carbohydrates with suitable examples. (6)
- (b) Outline the flow of genetic information in living organisms. (6)
5. (a) What is Speciation ? Elaborate various models of speciation. (8)
- (b) Name any four functional groups in the biological molecules with suitable examples. (4)
6. (a) Discuss the four emergent properties of water and their role in the existence of life on Earth. (8)
- (b) Explain the theme 'Structure and Function are correlated at all levels of biological organisation'. (4)

7. Write short notes on **any three** of the following :

(i) Mass extinction

(ii) Three domains of life

(iii) Ecosystem

(iv) Macroevolution

(v) Steroids

(4,4,4)