[This question paper contains 4 printed pages.]

| Sr. No. of Question Paper | : | 6281 | D | Your Roll No |
|---------------------------|---|---------------------|--------|--------------------|
| Unique Paper Code | : | 216/223/151 | | |
| Name of the Course | : | B.Sc. (Prog.) / B.S | ic. (E | Ions.) |
| Name of the Paper | : | Introduction to Bio | ology | - LSPT-101 |
| Semester | : | Ι | | |
| Time : 3 Hours | | | | Maximum Marks : 75 |

Instructions for Candidates

- 1. Write your Roll No. on the top immediately on receipt of this question paper.
- 2. Attempt Five questions in all including Question No. 1 which is compulsory.
- 3. Attempt different parts of the same question one after the other, (not necessarily in the same order).
- 1. (i) Define the following terms :
 - (a) Codon
 - (b) Genomics
 - (c) Peptide bond
 - (d) Phylogeny
 - (e) System biology
 - (ii) Differentiate between the following :
 - (a) Phenotype and Genotype
 - (b) Aldoses and Ketoses
 - (c) Homologous and Analogous structures

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(5)

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| | (d) Intron and Exon | |
| | (e) Monophyletic and Polyphyletic groups | (10) |
| (iii) I | 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 hydrogen bonding. | sult of |
| | (e) Amount of heat required to convert 1g of any substance fro liquid to the gaseous state. | m the |

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| | (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) |
| | at is reproductive isolation ? Discuss the different types of isolating mechanisms rating 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) |

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- 7. Write short notes on any three of the following :
 - (i) Mass extinction
 - (ii) Three domains of life
 - (iii) Ecosystem
 - (iv) Macroevolution
 - (v) Steroids