This question paper contains 3 printed pages.

5098 *Your Roll No.* .....

B.Sc. (Prog.) / B.Sc. (Hons.) / I **B**

Paper — BY 105 – BIOLOGY

(Admissions of 2008 and onwards)

Time : 3 hours *Maximum Marks* : 75

(Write your Roll No. on the top immediately on receipt of this question paper.)

SECTION A (*Botany*)

Attempt ***three*** *questions in all including Question No. 1 which is compulsory.*

1. (*i*) Define/Explain any *nine* of the following :

   (*a*) Mass Number

   (*b*) *p*H Scale

   (*c*) Polymer

   (*d*) Hydrophobic substances

   (*e*) Diffusion

   (*f*) Cohesion

   (*g*) Tonicity

   (*h*) Plasmolysis

   (*i*) Radioactive Isotopes

   (*j*) Trace element

   (*k*) Virus. 1×9=9

   (*ii*) Briefly describe the various models proposed for explaining the structure of biomembranes.

   Or

   Briefly describe Miller's experiment on abiotic synthesis of organic compounds.

2. (*i*) Comment on :—

   (*a*) The biological importance of water.

P. T. O.

(*b*) Amino acids are building blocks of proteins.

3×2=6

(*ii*) Write an account on cellular proteins and their various functions. 6

3. (*i*) Give one word answer :

(*a*) A storage polysaccharide of plants

(*b*) A microscope used to study the internal ultrastructure of cells.

(*c*) An instrument used to isolate cell components based on size and density.

(*d*) The study of cell structure.

(*e*) A process in which cell takes in biological molecules by forming new vesicles from plasma membrane. 5

(*ii*) Describe the construction, working and image formation of a compound microscope. 7

4. Differentiate between any *four* :

(*i*) Magnification and Resolution

(*ii*) Macroelements and Microelements

(*iii*) Primary and secondary structure of proteins

(*iv*) DNA and RNA

(*v*) Saturated and unsaturated fatty acids

(*vi*) 1,4-glycosidic bonds and 1,6-glycosidic bonds. 12

5. Write short notes on any *four* :

(*i*) Chloroplast

(*ii*) Structural polysaccharides

(*iii*) Covalent bonds

(*iv*) Functions of cell wall

(*v*) Geometric Isomers. 12

Section B (Zoology) 37

Answer *three* questions including Question 1 which is compulsory. Draw diagrams wherever necessary.

1 A. Complete the statement in column I with those in column II: 3

I	II
i. Bacteriophage	Protein
ii. Ribosome	Interphase
iii. Mitochondria	Transduction
iv. Peptidoglycan	RNA
v. Nucleolus	ATP
vi. Gap phase	Bacteria

B. Fill in the blanks: 5

i. ..... are rod,shaped bacteria.
ii. ..... is the transfer of DNA from one bacterial cell to another via a special protein structure pilus.
iii. ..... are called suicidal bags of the cell.
iv.The plasma membrane in folding in bacterial cell is called .....
v. The chromosome with centromere placed in the central position is called as.....

C. Answer in one word: 4

i. Scientist who discovered nucleus.
ii. Site for ribosome biogenesis.
iii. Proposed the most accepted model for plasma membrane.
iv. Coined the term Lysosome.

2. Differentiate between *any five* 12.5

i. Autophagosome and Heterophagosome
ii. Translation and Transcription
iii. Nucleoid and Plasmid
iv. Microfilament and Microtubule
v. Centromere and Telomere
vi. 70S and 80S ribosome
vii. Acrocentric and Submetacentric
viii. Coacervate and Microsphere

3. Write short note on :

i Urey- Miller experiment 6.5
ii. Fossils 6

or

Endoplasmic reticulum

4 a. Describe the various morphological types of chromosomes as per position of centomere. 4
b. Differentiate between Eukaryote and Prokaryote 3.5
c. Draw neat labeled diagram of cell cycle. 5