M.Sc. (Part–I) Semester–I (C.B.C.S. Scheme) Examination
BIOINFORMATICS
(Cell and Molecular Biology)
Paper–II

Time : Three Hours] [Maximum Marks : 80

Note :— (1) All questions are compulsory and carry equal marks.
(2) Draw well labelled diagram and give suitable examples wherever necessary.

1. (a) How can you differentiate plant cell from animal cell ? 4
   (b) Enlist different phases of meiosis with their figures. 4
   (c) Why crossing over as well as chiasma formation are important events in meiosis ? 4
   (d) Comment upon lipids and their characteristics found in the membranes. 4

OR

   (p) Write in brief about the importance of meiosis in the view of variation. 4
   (q) Explain various events in mitosis. 4
   (r) What is the importance of centrosomes in mitotic divisions ? 4
   (s) Discuss the functions of plasma membrane in the cell. 4

2. Explain detailed structure of chloroplast. Draw a neat, well labelled diagram. 16

OR

Draw a neat well labelled diagram of mitochondria and explain its structure in detailed manner. 16

3. (a) Explain the structure of chromosome. 4
   (b) Write in brief about nuclear localization signals with their significance. 4
   (c) What are importins ? How do they work ? 4
   (d) Write in detail about nuclear envelope. 4

OR

   (p) Write in brief about the DNA binding proteins. 4
   (q) Write in brief about exportins. 4
   (r) Explain the structure of nuclear pore complex. 4
   (s) Explain the structure of nucleosome. 4

4. Explain the detailed process of DNA replication in eukaryotes. 16

OR

Explain in detail about the post translational modifications of RNA with its significance. 16

5. (a) Explain corepression. 4
   (b) What is the significance of promoters in the protein expression ? 4
   (c) How is the translational process regulated ? 4
   (d) Explain the regulation of histidine operon. 4

OR

   (p) How does lacrose promote transcription of Lac 2 ? 4
   (q) What is the role of glucose in regulating lac operon expression ? 4
   (r) Describe the process of repression in trp operon. 4
   (s) Explain the process of attenuation in trp operon under conditions of low and high tryptophan levels. 4