

FIVE YEAR INTEGRATED M.Sc., EXAMINATION 2021
SEMESTER - VII
Paper LS-4-7-2
Methods in Biology - I

Time: Four Hours

Full Marks: 80

Questions are of value as indicated in the margin.
Answer **Question No.01** and **any four** from the rest.

1. Write short notes on **any ten** of the following: 10 x 2 = 20
 - a. Isoelectric focusing
 - b. RNase A
 - c. RNA ligase
 - d. Alkaline phosphatase
 - e. NGS
 - f. TaqMan® probes
 - g. TALENs
 - h. Hot start PCR
 - i. BAC
 - j. Ligases
 - k. RAPD
 - l. Transcriptome

2.
 - a. Briefly explain CRISPR-Cas9 system for making gene knock out in a cell line. (5)
 - b. Briefly discuss about and the use of inducible promoter in an expression system. (3)
 - c. Write short notes on DNA microarrays. (4)
 - d. Write short notes on PAGE. (3)

3.
 - a. Describe Illumina sequencing method. (10)
 - b. With the help of a flow diagram explain cDNA library construction of an animal cell line. (5)

4.
 - a. Briefly explain electroporation method of DNA transfer. (3)
 - b. Explain super critical fluid extraction method for total lipid determination. (3)
 - c. Briefly explain how body labeled RNA probes could be made. (4)
 - d. Site directed mutagenesis using PCR. (5)

5. a. Briefly describe Ion Torrent sequencing method. (5)
b. Describe DIGE. (5)
c. Explain Edman's method of peptide sequencing. (5)
6. a. Taking a suitable example explain ChIP. (5)
b. Name any four post translational modifications of proteins. (2)
c. Explain SOLiD method of DNA sequencing, its advantages and disadvantages. (4+2+2=8)
7. a. Briefly describe Southern Blotting. (5)
b. In a hypothetical scenario, during differentiation of a cell, a gene, A gets rearranged permanently in its genomic locus. During the rearrangement, a part of the gene consisting of 5 kbp is lost permanently from its genomic locus. From the differentiated cell, transcripts of Gene A, is made based on the rearranged locus. Discuss a strategy to find this scenario and discuss the expected results. (10)