

B.Sc. (Part-II) Semester-IV Examination

4S : BIOTECHNOLOGY

(Genetic Engineering and Microbial Biotechnology)

Time : Three Hours]

[Maximum Marks : 80

Note :— (1) ALL questions are compulsory.

(2) Draw well labelled diagrams wherever necessary.

1. (A) Fill in the blanks :

- (i) Transfer of DNA on Nitrocellulose membrane is called _____ . ½
- (ii) _____ is used as Antidiabetic protein. ½
- (iii) Extraction of Metal ions with the help of Micro-organisms is called _____ . ½
- (iv) Lac Z gene of Lac Operon codes for _____ . ½

(B) Choose the correct alternative :

- (i) Which one is not a termination codon ? ½
 - (a) UAA
 - (b) UAG
 - (c) AUG
 - (d) UGA
- (ii) PCR was invented by : ½
 - (a) Watson & Crick
 - (b) Kary Mullis
 - (c) Jacob & Monad
 - (d) Willkins
- (iii) Which is the main component of Biogas ? ½
 - (a) CO₂
 - (b) H₂
 - (c) H₂S
 - (d) CH₄
- (iv) Which among these is not a biofertilizer ? ½
 - (a) Rhizobium
 - (b) Agrobacterium
 - (c) Azospirillum
 - (d) Azotobacter

(C) Answer in one sentence each :

- (i) What is Transposon ? 1
- (ii) Give long form of CSTR. 1
- (iii) Define fermentation 1
- (iv) What are bacteriophages ? 1

2. Describe Watson & Crick double helical model of DNA. 12

OR

What is Replication ? Describe the mechanism of DNA replication in Eukaryotes. 12

3. Explain :

- (a) Components of Lac operon 4
- (b) Transcriptional Bubble 4
- (c) Britton & Davidson model. 4

OR

(d) Inducer & Repressor of Lac operon	4
(e) Structure of mRNA	4
(f) Post translational modification of protein.	4
4. Describe :	
(a) Southern Blotting	4
(b) Plasmid	4
(c) DNA manipulating enzymes	4
OR	
(d) Bacteriophage	4
(e) Genomic DNA library	4
(f) PCR.	4
5. Describe :	
(a) Insulin	4
(b) Recombinant vaccines	4
(c) Amino acids.	4
OR	
(d) Interferon	4
(e) Dextran	4
(f) Erythropoietin.	4
6. Explain :	
(a) CSTR Bioreactor	6
(b) Alcohol fermentation	6
OR	
(c) Batch & continuous fermentation	6
(d) Penicillin fermentation	6
7. Describe :	
(a) Biogas	4
(b) Rhizobium as biofertilizer	4
(c) Bioremediation.	4
OR	
(d) Bioleaching	4
(e) Biopesticide	4
(f) Xenobiotic compounds.	4