B.Sc. (Part–III) Semester–VI Examination

BOTANY

(Molecular Biology and Biotechnology)

Time : Three Hours] [Maximum Marks : 80

Note :— (1) There are **SEVEN** questions in all.

(2) Question No. 1 is compulsory and carries 8 marks.

(3) Question Nos. **2** to **7** carry equal marks.

(4) Draw well labelled diagrams wherever necessary.

1. (A) Fill in the blanks : 2

(i) In DNA Adenine (A) and Thymine (T) are paired by _____ Hydrogen bonds.

(ii) Lac Operon Model was proposed by _____ in 1953.

(iii) Replication of DNA takes place in _____ phase of interphase of cell cycle.

(iv) In protein, aminoacids are linked together by _____ bonds.

(B) MCQ : 2

(v) Agro bacterium species in nature is _____.

(a) Artificial genetic engineer

(b) Natural genetic engineer

(c) Chemical engineer

(d) Mutagen

(vi) Bt Cotton is an example of _____ .

(a) Ornamental Plant

(b) Timber Plant

(c) Transgenic Plant

(d) Dye Yielding Plant

(vii) Amplification of DNA is done by using _____ .

(a) Chromatography

(b) PCR

(c) Electrophoresis

(d) Proteomics

(viii) Genetic code is a combination of _____ nitrogen bases.

(a) Four

(b) Two

(d) cDNA library 4

(e) Electroporation 4

(f) Agrobactrium mediated gene transfer. 4

6. Discuss basic aspects of plant tissue culture. Add a note on Infrastructure and Instrumentation. 12

OR

Give detail account of Cellular Totipotency, Differentiation and Morphogenesis. 12

7. Explain the following :

(a) Protoplast Culture 4

(b) Alcohol fermentation 4

(c) Bt-cotton. 4

OR

(d) Edible Vaccine 4

(e) Synthetic Seeds 4

(f) Salient achievements of crop biotechnology (any four) 4

(c) Three

(d) Single

(C) Answer in **ONE** sentence : 4

(ix) Who proposed double helix model of DNA ?

(x) What is Protoplast ?

(xi) Define Micro-propagation.

(xii) Long form of GMO.

2. Comment on :

(a) Griffith's experiment 4

(b) Enzymes involved in Replication 4

(c) Repetitive DNA. 4

OR

(d) Chemical composition of DNA. 4

(e) Nucleosome model. 4

(f) Transposable elements in Eukaryote [AC-DS System] 4

3. Explain the following :

(a) Properties of genetic code (any four) : 4

(b) Concept of Gene 4

(c) Endomembrane system. 4

OR

(d) mRNA Processing. 4

(e) Role of ribosome in translation. 4

(f) tRNA. 4

4. Explain Operon concept with special reference to Lac Operon. 12

OR

(a) Primary and Secondary Structure of Protein. 6

(b) Britton Davidson Model. 6

5. Comment on :

(a) PCR 4

(b) Genomic DNA library 4

(c) Restriction enzymes 4

OR