AS–1480

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) Q. **1** is compulsory and carries **8** marks.

(3) Q. **2** to Q. **7** carry equal marks.

(4) Draw neat and well labelled diagrams wherever necessary.

1. (A) Fill in the Blanks :

(i) In eukaryotes nucleosome is made up of DNA and _____ proteins. ½

(ii) Ability of a plant cell to differentiate into entire plant is known as _____ . ½

(iii) Nucleotide is composed of Deoxyribose sugar, Nitrogen base and _____ . ½

(iv) In concept of gene, muton is a unit of _____ . ½

(B) Choose the correct alternative (MCQ) :

(v) The Lac-Operon concept of regulation in gene expression was given by ½

(a) Watson and Crick (b) H. G. Khorana

(c) Meselson and Stahl (d) Jacob and Monad

(vi) Britton and Davidson Model is also known as : ½

(a) Switch on/off model (b) Gene battery model

(c) Bio-electric model (d) Nucleosome model

(vii) Restriction endonucleases used for : ½

(a) DNA cleavage (b) DNA joining

(c) DNA strand separation (d) Cell lysis

(viii) Androgenic haploid plant produced by _____ : ½

(a) Ovule culture (b) Embryo culture

(c) Anther culture (d) Ovary culture.

(C) Write answer in one sentence each :

(i) What is cryopreservation ? 1

(ii) What is recon ? 1

(iii) PCR stands for ? 1

(iv) What is transcription ? 1

2. Explain :—

(a) Hershey and Chase experiment. 4

(b) Double Helical Model of DNA. 4

(c) Transposable elements in plants. 4

OR

(d) Solenoid model. 4

(e) Replication of DNA in eukaryotes. 4

(f) Repetitive DNA. 4

3. (g) Properties of genetic code 6

(h) Types of RNA. 6

OR

Explain :

(i) Mechanism of transcription in eukaryotes. 6

(j) Concept of gene. 6

4. Explain :—

(k) Secondary structure of protein. 4

(l) Britton-Davidson model. 4

(m) Lac-Opeon model. 4

OR

(n) Primary structure of Protein. 4

(o) Targeting of protein. 4

(p) Protein folding mechanism. 4

5. Explain :

(q) Restriction enzymes. 6

(r) Agrobacterium mediated gene transfer. 6

OR

(s) Genomic Library. 6

(t) Polymerase Chain Reaction (PCR). 6

6. Explain :—

(u) Application of cytokinins in tissue culture. 4

(v) MS Media and its composition. 4

(w) Autoclave. 4

OR

(x) Application of Auxins in tissue culture. 4

(y) Callus culture. 4

(z) Differentiation and morphogenesis. 4

7. Comment on :—

(a) Protoplast Culture. 4

(b) BT-Cotton. 4

(c) Fermentation technology in alcohol production. 4

OR

(d) Salient achievements of crop biotechnology. 4

(e) Somatic hybridization. 4

(f) Edible vaccines. 4