AT–406

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 :

(i) Cytosine and _____ are pyrimidines of DNA. ½

(ii) Enzyme _____ is used to join DNA fragments. ½

(iii) Agar agar is added in tissue culture media as _____ agent. ½

(iv) The unit of mutation within gene is called as _____. ½

(B) Choose correct alternatives (MCQ) :

(v) In enzymatic protoplast isolation method which of the following enzymes is used ?

(a) Endonucleases (b) Pectinase

(c) Ligases (d) Topoisomerase ½

(vi) Which of the following acts as an inducer for Lac operon ?

(a) Galactose (b) Lactose

(c) Glucose (d) Fructose ½

(vii) Chief enzyme working in Transcription is :

(a) DNA Polymerase (b) RNA Polymerase

(c) Restriction Endonuclease (d) Isomerases ½

(viii) Which of the following is a molecular scissors ?

(a) Polymerases (b) Topoisomerases

(c) Reverse transcriptase (d) Restriction endonucleases ½

(C) Answer in **one** sentence :

(ix) What is jumping genes ? 1

(x) What is transcription ? 1

(xi) Who developed PCR technique ? 1

(xii) What is callus ? 1

2. Explain :

(a) Double helical model of DNA. 4

(b) Griffith's experiment. 4

(c) Ac-Ds system in maize. 4

OR

(d) Replication of DNA. 4

(e) Nucleosome. 4

(f) Satellite DNA. 4

3. Explain :

(g) t-RNA 4

(h) Concept of gene 4

(i) mRNA processing 4

OR

(j) Transcription in Eukaryotes 4

(k) Endomembrane system 4

(l) Properties of genetic code (any four) 4

4. Describe :

(m) Concept of Lac operon 6

(n) Mechanism of protein folding 6

OR

(o) Protein trafficking 6

(p) Britton Davidson Model 6

5. (q) What is gene amplification ? Give an account of PCR. 6

(r) Give an account of Restriction enzymes. 6

OR

(s) Describe Agrobacterium mediated gene transfer. 6

(t) Explain Genomic DNA library. 6

6. Explain :

(u) Callus culture 4

(v) Laminar air flow 4

(w) Totipotency 4

OR

(x) Growth Hormones 4

(y) Autoclave 4

(z) Micropropagation 4

7. Explain :

(a) Edible vaccines 4

(b) Anther culture 4

(c) Synthetic seeds 4

OR

(d) Isolation of protoplast 4

(e) Cryopreservation 4

(f) Alcohol production 4