AU–166

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

BOTANY

(Molecular Biology and Biotechnology)

Time : Three Hours] [Maximum Marks : 80

N.B. :— (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) Mode of DNA replication is of _____ type. ½

(ii) Genetic codon consists of _____ nucleotides. ½

(iii) The Lac Y gene involved in the synthesis of _____ . ½

(iv) In DNA cloning _____ are used to carry a fragment of target DNA into a host cell. ½

(B) Choose the correct alternative (MCQ) :

(v) Auxin added in medium induces : ½

(a) Shooting

(b) Fruiting

(c) Rooting

(d) Flowering

(vi) The most commonly used chemical fusogen is : ½

(a) Ethanol

(b) Sodium hypochloride

(c) Polyethylene glycol

(d) DMSO (Dimethyl Sulphoxide)

(vii) The process involved in the removal of introns and fusion of exons is called : ½

(a) Splitting

(b) Adenylation

(c) Splicing

(d) Tagging

(viii) Clover leaf model describes the structure of : ½

(a) m-RNA

(b) DNA

(c) t-RNA

(d) r-RNA

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

(ix) Which enzyme is responsible for Reverse transcription ? 1

(x) What is sterilizaton ? 1

(xi) What is recon ? 1

(xii) What is the function of tRNA ? 1

2. Explain :

(a) Repetitive DNA. 4

(b) Chemical composition of DNA. 4

(c) Hershey and Chase Experiment. 4

OR

(d) Nucleosome model. 4

(e) Replication Fork of DNA. 4

(f) Transposable elements. 4

3. Explain :

(g) Types of RNA used in protein synthesis. 6

(h) Characteristics of Genetic code [Any three]. 6

OR

(i) Transcription in Eukaryotes. 6

(j) Ribosome as a translation machine. 6

4. Explain :

(k) Secondary structure of protein. 4

(l) Protein trafficking. 4

(m) Components of Lac-Operon. 4

OR

(n) Quaternary structure of protein. 4

(o) Britten-Davidson model. 4

(p) Tertiary structure of protein. 4

5. Explain :

(q) Plasmid. 4

(r) Electroporation. 4

(s) Restriction enzymes. 4

OR

(t) c-DNA library. 4

(u) Phages as vector. 4

(v) Polymerase chain reaction. 4

6. Explain :

(w) Sterilization techniques. 4

(x) MS-Media. 4

(y) Growth Chamber. 4

OR

(z) Growth Hormones. 4

(a) Cellular differentiation. 4

(b) Autoclave. 4

7. (c) What is transgenic plants ? Give an account of Bt cotton. 6

(d) Fermentation technology in Bakery products. 6

OR

(e) What are haploid plants ? Give an account of pollen culture technique. 6

(f) What is meant by genetically modified organisms ? Give pros and cons. 6