AW–1772

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

ZOOLOGY

(Molecular Biology and Biotechnology)

Time : Three Hours] [Maximum Marks : 80

Note :— (1) All the questions are compulsory.
(2) Question No. **1** carries **8** marks.
(3) Question Nos. **2 to 7** carry **12** marks each.
(4) Illustrate your answers with suitable diagrams wherever necessary.

1. (a) Fill in the blanks :
(i) The following nucleic acid has a left handed helix _____. ½
(ii) Gene as unit of Mutation is called as _____. ½
(iii) In DNA guanine always pairs with _____. ½
(iv) ELISA is based on _____. ½

(b) Choose the correct alternatives from the following :
(v) How many codons are called to code for all 20 essential amino acids ? ½
(a) 20 (b) 4
(c) 61 (d) 60
(vi) Transcription takes place in : ½
(a) Matrix (b) Nucleus
(c) Cystol (d) Cytoplasm
(vii) The anticodon region is an important structural component of _____. ½
(a) m-RNA (b) DNA
(c) r-RNA (d) t-RNA
(viii) The antibodies are _____. ½
(a) Carbohydrates (b) Proteins
(c) Lipids (d) Germs

(c) Answer in **one** sentence each :
(ix) What is point mutation ? 1
(x) What is Lambda phage vector ? 1
(xi) What is bacteriophage ? 1
(xii) What are introns ? 1

2. Describe mitochondrial DNA. 12

OR

Explain the structural characteristics of clover leaf model of tRNA and its functions.

3. Describe the mechanism of DNA Replication. 12

OR

Describe overlapping gene and jumping gene.

4. Attempt the following :
   (a) Features of Genetic code.
   (b) Britten Davidson Model.
   (c) Transcription of mRNA.

OR

   (d) Draw a well-labelled diagram of Lac-operon model.
   (e) Translation.
   (f) Gene regulation. 12

5. Explain the following :
   (g) Frame shift mutations.
   (h) Southern blotting.
   (i) Polymerase Chain Reactions (PCR).

OR

   (j) Significance of Mutation.
   (k) Western blotting.
   (l) Applications of DNA fingerprinting. 12

6. Explain the following :
   (m) Plasmid as a vector.
   (n) Somatic cell hybridization.
   (o) Cloning of genes.

OR

   (p) Applications of monoclonal antibodies.
   (q) Recombinant DNA Technology.
   (r) Splicing of genes. 12

7. Describe the following :
   (s) T-cell receptors.
   (t) Functions of Antibody.
   (u) ELISA.

OR

   (v) Haptens.
   (w) Innate Immunity.
   (x) RIA. 12