AT–409

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

6S : ZOOLOGY

(Molecular Biology and Biotechnology)

Time : Three Hours] [Maximum Marks : 80

Note :— (1) **ALL** questions are compulsory.

(2) Question No. 1 carries only 8 marks.

(3) Question No. 2 to 7 carry 12 marks each.

(4) Illustrate your answer with suitable diagrams wherever necessary.

1. (A) Fill in the blanks :

(i) The diameter of Z DNA molecule is _____.

(ii) DNA replication takes place by _____ mode.

(iii) Genetic code codes for _____ essential amino acids.

(iv) Mutation occuring in gametic cell is called _____ mutation. 2

(B) Choose correct alternative from the following :

(i) Base pairs present per spiral of double stranded B-DNA :

(a) 10 (b) 12

(c) 13 (d) 11

(ii) The jumping genes are also called as :

(a) Running genes (b) Leaping genes

(c) Transpons (d) up & down genes

(iii) In operon concept regulator gene functions as :

(a) Inhibitor (b) Regulator

(c) Repressor (d) All of these

(iv) The loss of one single chromosome creates a condition called :

(a) Trisomy (b) Nullisomy

(c) Monosomy (d) Haploidy 2

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

(i) What is okazaki fragment ?

(ii) Name the initiation codon.

(iii) What is cistron ?

(iv) What is polyploidy ? 4

2. Describe the following :

(a) Structure of t-RNA.

(b) Mitochondrial DNA.

(c) Avery and co-workers experiment.

OR

(d) Nucleosides

(e) Structure and function of r-RNA

(f) Hershey and Chase Experiment. 12

3. Explain the following :

(g) Split gene

(h) Okazaki fragment

(i) DNA polymerase enzyme

OR

(j) Meselsons and Stahl's experiment

(k) Action of cistron

(l) Spinocerebellar atoxia 12

4. Describe the following :

   (m) Process of transcription

   (n) Gene regulation in Eukaryotes

   (o) Properties of genetic code

OR

   (p) Elongation of polypeptide chain in translation

   (q) Promotor and operator gene

   (r) Start codon and non-sense codons. 12

5. What is DNA finger printing ? Describe the process of DNA finger printing and its significance.

OR

Define mutation. Describe substitution mutations. 12

6. Describe the following :

   (s) Cosmid

   (t) Electroporation

   (u) Practical applications of Biotechnology in Agriculture.

OR

   (v) DNA ligase

   (w) Restriction endonuclease

   (x) Monoclonal antibodies. 12

7. Describe cell mediated immunity system.

OR

Give an account on ELISA Technique. 12