AS–1483

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

ZOOLOGY

(Molecular Biology and Biotechnology)

Time : Three Hours] [Maximum Marks : 80

Note :— (1) All 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 : 2

(i) The left handed form of DNA is _____ .

(ii) AUG is the _____ codon.

(iii) Western blotting technique is used for detection of _____ bands.

(iv) In mammals, B cells mature in _____ .

(b) Choose correct alternative from the following :— 2

(v) Purine bases have _____ .

(i) Two rings (ii) One ring

(ii) Three rings (iv) No rings

(vi) Non-sense codons are :

(i) UAG, UAA, UGA (ii) GUA, AGU, AAG

(iii) UAA, GUA, AGU (iv) AGU, AAG, UAA

(vii) _____ enzyme is used in PCR :

(i) DNA ligase (ii) Taq polymerase

(iii) Helicases (iv) Alkaline Phosphatase.

(viii) Antibody molecule consists of _____ :

(i) L-chain (ii) H-chain

(iii) L and H chains (iv) No-chain.

(c) Answer in one sentence : 4

(ix) What is replication ?

(x) What is anticodon ?

(xi) Who invented DNA fingerprinting ?

(xii) What are antigens ?

2. Describe the following : 12

(a) Griffith's Transformation experiment

(b) Mitochondrial DNA.

(c) Clover-leaf model of t-RNA.

OR

(d) Hershey and Chase Experiment.

(e) Types of DNA.

(f) m-RNA.

3. Attempt the following :— 12

(g) Messelson and Stahl Experiment.

(h) One gene-one enzyme hypothesis.

(i) Split genes.

OR

(j) Jumping genes.

(k) Overlapping genes.

(l) DNA polymerase enzyme.

4. Describe genetic code and its features. 12

OR

Describe lac-operon model of E.Coli.

5. Describe the following :—

(m) Frameshift mutation.

(n) Southern blotting technique.

(o) Induced mutation.

OR

(p) PCR (Polymerase Chain Reaction).

(q) Euploidy.

(r) Deletion as structural chromosomal aberration.

6. Attempt the following :— 12

(s) Gene cloning.

(t) Hybridoma technology.

(u) Practical Application of Biotechnology to Agriculture.

OR

(v) Plasmid as a Vector.

(w) Somatic cell Hybridization.

(x) Hazards of Biotechnology.

7. Describe the complement system. 12

OR

Describe cell-mediated immunity.