OR

(j) Inversion

(k) Euploidy

(l) Applications of DNA fingerprinting. 12

6. Describe the following :—

(m) Somatic cell hybridization.

(n) Ti plasmid.

(o) Uses of polyethylene glycol. 12

OR

(p) λ phage vector.

(q) Enzymes in recombinant DNA technology.

(r) Monoclonal antibodies. 12

7. Explain the following :—

(s) Adaptive immunity.

(t) Structure of antibody.

(u) ELISA. 12

OR

(v) Innate immunity.

(w) Haptens.

(x) RIA. 12

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

6S ZOOLOGY

Molecular Biology and Biotechnology

P. Pages : 4

Time : Three Hours] [Max. Marks : 80

Note : (1) All questions are compulsory.
(2) Question **one** carries only **eight** marks.
(3) Question no. **two** to **seven** carry **twelve** marks each.
(4) Illustrate your answers with suitable diagrams wherever necessary.

1. (a) Fill in the blanks :—

(i) Clover leaf model describes structure of —— RNA.

(ii) —— is the initiation codon.

(iii) —— lymphocytes mature in bone marrow.

(iv) Heavy and Light chains of antibodies are held by —— . 2

(b) Multiple Choice Question :—

(v) Restriction enzymes are isolated from

(a) Protozoa

(b) Corals

(c) Bacteria

(d) Fungi.

(vi) —— used N^{14} and N^{15} isotopes to prove DNA replication

(a) Darwin and Mendel

(b) Hershey and Chase

(c) Griffith and Avery

(d) Meselson and Stahl.

(vii) In RNA uracil replaces

(a) Cytosine

(b) Adenine

(c) Guanine

(d) Thymine.

(viii) Unwinding of DNA is done by

(a) Helicase

(b) Ligase

(c) Hexanuclease

(d) Topoisomerase. 2

(c) Answer in **one** sentence :—

(ix) In DNA replication which strand is synthesised in continuous manner ?

(x) Which amino acid is replaced by valine in sickle cell anemia ?

(xi) What is a vector ?

(xii) How many polypeptide chains are there in antibody structure ? 4

2. Describe in detail Griffiths transformation experiments. 12

OR

Explain the structure and functions of mRNA. 12

3. Describe the following :—

(a) Jumping gene.

(b) Spinocerebellar ataxia.

(c) Cistron. 12

OR

(d) Split genes.

(e) One gene one enzyme hypothesis.

(f) Overlapping gene. 12

4. Describe Mechanism of Protein Synthesis. 12

OR

Describe Lac Operon Model of E. Coli. 12

5. Explain the following :—

(g) De vries mutation theory.

(h) Northern blotting technique.

(i) Excision repair of DNA. 12