AT–369

B.Sc. (Part-II) Semester-IV Examination

4S : BIOINFORMATICS

(Fundamentals of Molecular Biology and Immune System)

Time : Three Hours] [Maximum Marks : 80

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

(2) Draw neat and well-labelled diagrams wherever necessary.

1. (A) Fill in the blanks : 2

(i) B Form of DNA is ..... handed helix.

(ii) Structure of tRNA was described by ..... .

(iii) Antibodies are produced in response to ..... .

(iv) Cell mediated immunity is produced by ..... .

(B) Choose the correct alternatives : 2

(i) Transposable genetic elements are also called as ..... .

(a) Sleeping Genes

(b) Jumping Genes

(c) Jig-Jaw Genes

(ii) The initiation codon is ..... .

(a) AUG

(b) UAG

(c) UAA

(iii) Antibodies are produced by ..... .

(a) T-lymphocytes

(b) B-lymphocytes

(c) Macrophages

(iv) Vaccines are used for .....

(a) production of antigen

(b) increase the immunity

(c) pathogenicity

(C) Answer in **ONE** sentence each : 4

(i) What are macrophages ?

(ii) Explain stop codon.

(iii) In which form structure of tRNA mentioned ?

(iv) What are non-sense codon ?

2. (A) Explain the forms of DNA. 4

(B) Describe the secondary structure of RNA. 4

(C) What are transposable elements ? 4

OR

(P) Explain the replication in prokaryotes. 4

(Q) Explain structure of DNA. 4

(R) What is genome organization ? 4

3. (A) Explain regulation of gene expression in prokaryotes. 12

OR

(P) Explain structural organization of eukaryotic genome. 12

4. (A) Explain the regulation of translation in prokaryotes. 4

(B) Explain chain elongation process. 4

(C) Describe the role of t-RNA. 4

OR

(P) Explain prokaryotic ribosomes. 4

(Q) Explain the initiation process. 4

(R) Explain translational factors. 4

5. (A) Explain the function of antibodies. 4

(B) Describe cells of immune system. 4

(C) Give the Antigen-Antibody reaction. 4

OR

(P) Explain Hapten. 4

(Q) Describe the various types of Antibodies. 4

(R) What are organs of immune system ? 4

6. Explain :

(A) Structure of eosinophils. 4

(B) Lymphocyte trafficking 4

(C) Natural killer cells. 4

OR

(P) Structure of Neutrophils 4

(Q) Types of vaccines 4

(R) Macrophages. 4

7. Describe in detail the classes of immunoglobulins and their differentiation. 12

OR

Explain the responses generated by T-Lymphatic and B-Lymphatic system. 12