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 well labelled diagram wherever necessary.

1. (A) Fill in the blanks :

(1) _____ is the primary lymphoid organ in avian.

(2) _____ is the pentamer antibody.

(3) CD_4 cells are also known as _____.

(4) APC stands for _____. 2

(B) Choose the correct alternative :

(1) ABO blood grouping system is based on :

(a) Enzyme-substrate reaction (b) Ligand-receptor reaction

(c) Antigen-antibody reaction (d) None of these

(2) The immunoglobulins which can pass through placenta :

(a) IgA (b) IgE

(c) IgG (d) IgM

(3) Smaller subunit of prokaryotic ribosome is _____ S.

(a) 10 (b) 20

(c) 30 (d) 40

(4) _____ plays important role in prokaryotic DNA replication.

(a) DNA polymerase III (b) DNA polymerase II

(c) DNA polymerase I (d) DNA polymerase IV 2

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

(1) Define hapten.

(2) What is the role of topoisomerase in DNA replication ?

(3) Define live vaccine.

(4) Define translation. 4

2. Explain :

(a) Double helical structure of DNA. 4

(b) B. farm of DNA. 4

(c) Enzymes involved in DNA replication. 4

OR

(p) Mitochondrial genome organization. 4

(q) Transposons. 4

(r) Secondary structure of RNA. 4

3. Describe :

(a) Any one genome sequencing method. 4

(b) Structure of prokaryotic gene. 4

(c) Functional genomics. 4

OR

(p) Genome analysis. 4

(q) Structure of Eukaryotic gene. 4

(r) Comparative genomics. 4

4. What are ribosomes ? Describe the structure of prokaryotic and eukaryotic ribosome in detail. 12

OR

Describe the process of translation in prokaryotic. 12

5. What are immunoglobulins ? Describe the structure, properties and functions of IgM and IgG. 12

OR

Describe in detail primary lymphoid organs. 12

6. Describe :

(a) Humoral immunity. 4

(b) T-lymphocytes. 4

(c) Dendritic cells. 4

OR

(p) Cell mediated immunity. 4

(q) Vaccines. 4

(r) Activated killer cells. 4

7. Explain :

(a) Interferons. 4

(b) Differentiation of immunoglobulins. 4

(c) T Lymphatic response. 4

OR

(p) Interleukins. 4

(q) B Lymphatic respone. 4

(r) Any one theory of antigen antibody reaction. 4