

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

## 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 :

- (i) Ribosomes is site of \_\_\_\_\_ . 2
- (ii) Bacteria is \_\_\_\_\_ organisms.
- (iii) Proteins are polymer of \_\_\_\_\_ .
- (iv) Cell mediated immunity is produced by \_\_\_\_\_ .

(B) Choose correct alternative :

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- (i) All antibody is made by \_\_\_\_\_ .
- (a) Carbohydrates                      (b) Immunoglobulins                      (c) Antigen
- (ii) The termination codon is :
- (a) UAG                                      (b) GAA                                      (c) AUG
- (iii) Vaccines are used for \_\_\_\_\_ .
- (a) production of antigen              (b) Increase the immunity              (c) pathogenicity
- (iv) Two amino acids are linked by :
- (a) hydrogen bond                      (b) peptide bond                      (c) Glycosidic bond

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

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- (i) Which nitrogen bases are present in DNA ?
- (ii) Write any one application of interferons.
- (iii) What are isoenzymes ?
- (iv) What are genes ?

2. Describe in detail double helical structure of DNA and explain various forms of DNA with the characteristics of each form. 12

**OR**

What is replication ? Explain the process of DNA replication in prokaryotes. 12

3. Describe :
- (A) Comparative genomics. 4
  - (B) Structure of eukaryotic gene. 4
  - (C) Sequencing methods. 4

**OR**

- (D) Functional genomics. 4
  - (E) Structure of prokaryotic gene. 4
  - (F) Regulation of gene expression in eukaryotes at transcriptional level. 4
4. Explain :
- (A) Translation initiation in eukaryotes. 4
  - (B) Transcription factors. 4
  - (C) Structure of prokaryotic ribosome. 4

**OR**

- (D) Termination of translation in eukaryotes. 4
  - (E) Structure of eukaryotic ribosomes. 4
  - (F) Regulation of translation in prokaryotes. 4
5. Describe :
- (A) What are immunoglobulins ? Explain their types. 4
  - (B) Structure of IgM. 4
  - (C) Antigen antibody reaction. 4

**OR**

- (D) Function of Lymphnodes. 4
- (E) Structure of IgE. 4
- (F) What are Hapten ? Explain their role in immunity development. 4

6. Explain :
- (A) Humoral immunity. 4
  - (B) T-lymphocytes. 4
  - (C) Dendritic cells. 4
- OR**
- (D) B-Lymphocytes response. 4
  - (E) Cell mediated immunity. 4
  - (F) Natural killer cells. 4
7. (A) Discuss theories of antigen-antibody reaction. 12
- OR**
- (D) Discuss interferons and interleukins and their application. 12

