FIRST SEMESTER M.A./M.Sc. DEGREE (REGULAR) EXAMINATION, NOVEMBER 2020/2021

(CBCSS)

Biology

BIO 1C 03—IMMUNOLOGY

(2020 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend **all** questions in each section.*

2. *The minimum number of questions to be attended from the Section/Part shall remain the same.*

3. *The instruction if any, to attend a minimum number of questions from each sub section/sub part/ sub division may be ignored.*

4. *There will be an overall ceiling for each Section/Part that is equivalent to the maximum weightage of the Section/Part.*

I. Answer any *four* of the following (Short Answer type questions) :

1 What are the host defense barriers contributing to innate immunity ?

2 Discuss on : (a) Dendritic cells ; and (b) Mast cells.

3 Differentiate between antigenicity and immunogenicity.

4 Illustrate the structure of immunoglobulin with diagram.

5 Explain the term 'bonus effect' in antigen-antibody interaction.

6 Note on immuno suppressants.

7 Discuss the classification of autoimmunity.

(4 × 2 = 8 weightage)

II. Answer any *four* of the following (Short essay type questions) :

8 Write note on class I MHC molecule.

9 Describe the principle, types and applications of ELISA.

10 Comment on hemolytic disease of new born.

Turn over

11 Describe briefly the mechanism of DNA vaccines.

12 Comment on HIV.

13 Explain immunotherapy of cancer in detail.

14 Distinguish between 'man-made antibody' and 'humanized antibody'.

(4 × 3 = 12 weightage)

III. Answer any *two* of the following (Long essay type questions) :

15 Give a detailed study on attributes and functions of cytokines.

16 Illustrate in detail about the organs of the immune system.

17 Explain in detail on the types of hypersensitivity reactions and their features.

18 Describe the classification, structure and functions of Antibody.

(2 × 5 = 10 weigthage)

FIRST SEMESTER M.A./M.Sc. DEGREE (REGULAR) EXAMINATION NOVEMBER 2020/2021

(CBCSS)

Biology

BIO 1C 02—MOLECULAR BIOLOGY

(2020 Admission onwards)

Time : Three Hours Maximum : 30 Weightage

General Instructions

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Section A

I. Answer any *four* of the following (Short Answer Type Questions) (Weightage 2) :

　　1　Selfish DNA.

　　2　Metastasis.

　　3　Ac and Ds elements in yeast.

　　4　Micro RNAs.

　　5　Mechanism of Peptide bond formation.

　　6　gRNA and its function.

　　7　Gene editing strategies.

(4 × 2 = 8 weightage)

Section B

II. Answer any *four* of the following (Short Essay Type Questions) (Weightage 3) :

　　8　Role of telomerase in DNA replication.

　　9　Outline of Excision repair systems.

Turn over

10   How Restriction enzymes are classified ?

11   Give an outline of regulation of *Trp* Operon.

12   Outline of Transcription in Eukaryotes.

13   Outline the characteristic features of genetic code.

14   Gene therapy.

                                                         (4 × 3 = 12 weightage)

Section C

III.   Answer any *two* of the following (Long Essay Type Questions) (Weightage 5) :

15   Explain in detail the outline, methods adopted, findings and application of Human Genome Project.

16   Give an outline of Genome editing methods.

17   Explain the DNA Replication Process in Eukaryotes.

18   What are transposons ? Give an outline of transposons found in eukaryotes.

                                                         (2 × 5 = 10 weightage)

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NOVEMBER 2020/2021

(CBCSS)

Biology

BIO 1C 01—BIOCHEMISTRY

(2020 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

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Part A

I. Answer any *four* of the following. Short Answer Type Questions. Weightage 2 :

   1 Write a short note on micro- RNA.

   2 Explain Anomerism.

   3 Describe Koshland's induced fit theory.

   4 Define acid number and saponification value and add a note on their importance.

   5 Explain laws of thermodynamics.

   6 Give a note on isoelectric pH of amino acids.

   7 Give the clinical significances of trypsin and choline esterase.

(4 × 2 = 8 weightage)

Turn over

Part B

II. Answer any *four* of the following. Short Essay Type Questions. Weightage 3 :

    8   Elaborate Ramachandran plot.

    9   What are prostaglandins and their functions.

   10   Write a detailed note on t-RNA.

   11   Explain allosteric enzymes.

   12   Give a detailed note on polysaccharides.

   13   Writea note on Lesh-Nyhan disease and Orotic aciduria.

   14   Explain Citric acid cycle.

(4 × 3 = 12 weightage)

Part C

III. Answer any *two* of the following. Long Essay Type Questions. Weightage 5 :

   15   Derive Michaelis Menten equation. Give the significance of Km value and Vmax.

   16   Explain biosynthesis of fatty acids.

   17   Write a detailed note on glycogen metabolism.

   18   Describe electron transport chain, ATP synthesis and inhibitors of ETC.

(2 × 5 = 10 weightage)