

SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY)  
EXAMINATION, APRIL 2022

(CBCSS)

Microbiology

MBG 2C 08—IMMUNOLOGY

(2019 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.*

**Section A (Short Answers)**

*Answer any four questions.*

*Each question carries 2 weightage.*

1. Write a note on Super antigens.
2. Write the principle of competitive ELISA.
3. Write briefly about subunit vaccines.
4. What are adjuvants ? Mention its role.
5. Write about serum sickness.
6. Differentiate between primary and secondary immune response.

(4 × 2 = 8 weightage)

**Section B (Short Essays)**

*Write any four of the following.  
Each question carries 3 weightage.*

7. Write a note on apoptosis.
8. Mention about important immunodeficiency diseases.
9. Briefly describe about hybridoma technology.
10. Discuss the major theories of immune response.
11. Write the principle and applications of RIA.
12. Write the structural organization of Class I and Class II MHC Molecules.

(4 × 3 = 12 weightage)

**Section C (Essays)**

*Write any two of the following.  
Each question carries 5 weightage.*

13. Write an essay on different classes of Immunoglobulins. Write the features of each.
14. Briefly describe about structure and functions of secondary lymphoid organs.
15. Write briefly about activation pathways and functions of Complement System.
16. Briefly discuss about T cell differentiation and activation.

(2 × 5 = 10 weightage)

SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY)  
EXAMINATION, APRIL 2022

(CBCSS)

Microbiology

MBG 2C 07—INDUSTRIAL MICROBIOLOGY

(2019 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.*

**Part A**

*Answer any four questions.*

*Each question carries 2 weightage.*

1. Antifoam agents.
2. Baffles.
3. Fed batch culture.
4. Primary Screening.
5. Trophophase.
6. Bakers Yeast.

(4 × 2 = 8 weightage)

**Part B**

*Answer any four questions.*

*Each question carries 3 weightage.*

7. Inhibitor used in fermentation medium.
8. Surface culture technique.
9. Crystallisation.
10. Crowded plate method.
11. SCP.
12. Secondary metabolites.

(4 × 3 = 12 weightage)

**Part C**

*Answer any two questions.*

*Each question carries 5 weightage.*

13. What are the major methods used for strain improvement ? Discuss with examples.
14. What are the various types of fermentor ?
15. Elaborate in detail the principle, upstream and downstream processing involved in the industrial production of benzyl penicillin.
16. Describe the fermentation of wine.

(2 × 5 = 10 weightage)

SECOND SEMESTER M.Sc. DEGREE [REGULAR/SUPPLEMENTARY]  
EXAMINATION, APRIL 2022

(CBCSS)

Microbiology

MBG 2C 06—FOOD AND DIARY MICROBIOLOGY

(2019 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.*

**Part A**

*Answer any four questions.*

- 1 Water activity.
- 2 Fermented vegetables.
- 3 Acidophilus milk.
- 4 Resazurin Test.
- 5 Appertisation.
- 6 Ergotism.

(4 × 2 = 8 marks)

**Part B**

*Answer any four questions.*

- 7 Fermented cereals.
- 8 Probiotics.

**Turn over**

- 9 SPC.
- 10 Pulsed electric field processing.
- 11 Food intoxication.
- 12 HACCP.

(4 × 3 = 12 marks)

### Part C

*Answer any two questions.*

- 13 Briefly explain the fermentation of beer.
- 14 Examine the various methods used for the microbiological examination of milk.
- 15 What are the various principles of food preservation? Examine the food preservation by irradiation.
- 16 What do you mean by food infection? Investigate food poisoning caused by *Salmonella* and *Clostridium*.

(2 × 5 = 10 marks)

SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY)  
EXAMINATION, APRIL 2022

(CBCSS)

Microbiology

MBG 2C 05—PRINCIPLES OF GENETICS

(2019 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.*

Part A

*Short answer type, answer any four questions.*

*2 weightage each.*

1. State law of segregation.
2. XX - XO sex determination.
3. Holiday model.
4. Aneuploidy.
5. F-factor.
6. Tandem duplication.

(4 × 2 = 8 weightage)

**Part B**

*Short essay type, Answer any four questions.*

*3 weightage each.*

7. Transposable elements.
8. Epistasis.
9. Genetic counselling.
10. Chromosome theory of sex determination.
11. Law of dominance.
12. Yeast plasmid.

(4 × 3 = 12 weightage)

**Part C**

*Essay, Answer any two questions.*

*5 weightage each.*

13. Explain Mendel's contribution to modern genetics.
14. Explain pedigree analysis for inheritance pattern of genetic diseases.
15. Explain gene transfer mechanisms in bacteria.
16. Write an essay on chromosomal aberration.

(2 × 5 = 10 weightage)