

**FACULTY OF SCIENCE****M.Sc. I – Semester (CBCS) Examination, September 2021****Subject: MICROBIOLOGY****Paper – I: General Microbiology & Microbial Physiology****Time: 2 Hours****Max. Marks: 80****PART – A****Note: Answer any five questions.****(5x7 = 35 Marks)**

- 1 Robert Koch
- 2 Endospores
- 3 Disinfectants
- 4 Moist heat sterilization
- 5 Bergey's Manual
- 6 Differential staining
- 7 Cell cycle in Bacteria
- 8 Macromolecules and supramolecules

**PART – B****Note: Answer any three questions.****(3x15 = 45 Marks)**

- 9 Explain the principle, working and applications of scanning electron microscope.
- 10 Describe in detail the structure of prokaryotic cell with emphasis on cell wall.
- 11 Write an essay on isolation and preservation of pure cultures.
- 12 Define media. Write an account on bacteriological media used in the laboratories.
- 13 Write an account on various identification methods of bacteria with emphasis on biochemical methods of identification
- 14 Classify nutritional groups of bacteria. Explain bacterial photosynthesis.
- 15 Define bacterial growth. Explain in detail various factors affecting bacterial growth.
- 16 What are various culturing methods of bacteria? Explain them in detail.

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FACULTY OF SCIENCE

M.Sc. I – Semester (CBCS) Examination, September 2021

Subject: MICROBIOLOGY

Paper –II: Virology

Time: 2 Hours

Max. Marks: 80

PART – A

Note: Answer any five questions.

(5x7 = 35 Marks)

- ~~1~~ subviral particles
- ~~2~~ Biological methods of viral detection
- ~~3~~ Genome organization of HIV
- ~~4~~ Clathrin coated pits
- 5 Interferons
- 6 RNA Tumor viruses
- 7 Viruses for gene delivery
- 8 Viral vectors used for cloning and sequencing

PART – B

Note: Answer any three questions.

(3x15 = 45 Marks)

- ~~9~~ Explain in detail ICTV system of classification of viruses.
- ~~10~~ Explain in detail various methods used for isolation and characterization of viruses.
- ~~11~~ Explain in detail structure, genome organization and replication of HBV?
- ~~12~~ Compare in detail steps involved in Lytic and lysogenic mode of viral replication.
- 13 Describe the process of recombination in phages.
- 14 Explain antiviral agents and their mode of action.
- 15 Write on types of viral vaccines and their preparation.
- 16 Explain in detail about Baculo virus expression system and its importance.

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**FACULTY OF SCIENCE**

**M.Sc. I – Semester (CBCS) Examination, September 2021**

**Subject: MICROBIOLOGY**

**Paper –III: Research Methodology and Techniques**

**Time: 2 Hours**

**Max. Marks: 80**

**PART – A**

**Note: Answer any five questions.**

**(5x7 = 35 Marks)**

- ~~1~~ Optical rotation
- ~~2~~ MALDI-TOF
- ~~3~~ Dialysis
- ~~4~~ Ultracentrifugation
- ~~5~~ DMRT
- ~~6~~ Poisson distribution
- ~~7~~ Plagiarism
- ~~8~~ Electronic spread sheet

**PART – B**

**Note: Answer any three questions.**

**(3x15 = 45 Marks)**

- ~~9~~ Describe the instrumentation and applications of a single beam spectrophotometer while adding a note on its applications.
- ~~10~~ Write about various types of electrophoresis used to separate proteins and nucleic acids.
- ~~11~~ What are the types of cell disruption techniques? What are the adverse factors that have to be taken care of to avoid loss of sample stability?
- 12 Describe the methods of understanding intermediary metabolism. Mention the applications of mutants.
- 13 What are the measures of central tendency calculated for a given population? Add a note on significance of standard deviation.
- 14 Mention the various types of sampling procedures for effective statistical analysis?
- 15 What are the criteria under consideration while filing a patent.
- ~~16~~ What are the commands used in Disk operating system? What are the applications of DOS?

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**FACULTY OF SCIENCE**

**M.Sc. I – Semester (CBCS) Examination, September 2021**

**Subject: MICROBIOLOGY**

**Paper –IV: Microbial Biochemistry**

**Time: 2 Hours**

**Max. Marks: 80**

**PART – A**

**Note: Answer any five questions.**

**(5x7 = 35 Marks)**

- 1 Write on the preparation of buffers.
- 2 Inhibitors of Oxidative phosphorylation.
- 3 Write on the structure of Thromboxanes.
- 4 Write on the structures of cerebrosides.
- 5 Explain the properties of aromatic amino acids.
- 6 Enzyme classification.
- 7 What are allosteric enzymes?
- 8 Write on thiamine pyrophosphate

**PART – B**

**Note: Answer any three questions.**

**(3x15 = 45 Marks)**

- 9 Define high energy compounds. Explain the classification of high energy compounds and add a note on ATP.
- 10 Discuss in detail on elucidation of electron flow in mitochondria?
- 11 Write on classification of lipids and their properties.
- 12 What are nucleotides? Discuss their structure and components.
- 13 What are proteins? Discuss their structure determination
- 14 Explain the purification methods of proteins and enzymes.
- 15 Define enzyme inhibition. Discuss in detail on the types of enzyme inhibition.
- 16 What are the methods utilized to increase microbial enzyme production and activity?

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