

Master of Science in Microbiology Examination: December - 2022

| Day & Date | Semester | Subject Name | Time | Code | Marks |
|----------------------|---------------------------|--------------------|----------------------------|------|-------|
| Friday 09-12-2022 | I (Fresh/ Repeater) | Bioinstrumentation | 11:00 AM To 01:30 PM | 1104 | 75 |

Instructions:

- 1) Q.5 is compulsory.
- 2) Attempt any 4 from the rest.
- 3) All questions carry equal marks.

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| Q.1 | Explain in detail types of centrifuge machines and write about the preparative and analytical centrifuge differential centrifugation. | 15 |
| Q.2 | Write in detail theory, principle and application of paper chromatography. | 15 |
| Q.3 | Explain the basic principles of electrophoresis and write about starch gel agarose. | 15 |
| Q.4 | Write about the use of radioisotopic in life science and write about the radioactive labeling. | 15 |
| Q.5 | Write the short notes on following. (Any 3) | 15 |
| | <ol style="list-style-type: none"> a) Gel filtration b) Atomic absorption c) Proportional chamber d) Dosimetry | |
| Q.6 | Explain in detail gradient methods with their application. | 15 |
| Q.7 | Discuss on Geiger Muller and Scintillation counters. | 15 |

Master of Science in Microbiology Examination: April - 2023

| Day & Date | Semester | Subject Name | Time | Code | Marks |
|-------------------------|---------------------------|---------------------------------|----------------------------|------|-------|
| Wednesday 03-04-2023 | I (Fresh/ Repeater) | Advanced Genetic Engineering | 11:00 AM To 01:30 PM | 1103 | 75 |

Instructions: 1) Q.5 is compulsory.
2) Attempt any 4 from the rest.
3) All questions carry equal marks.

- Q.1 Explain Streptomyces ,Transformation ,plasmid,and vector 15
- Q.2 Explain Mechanism of transposition 15
- Q.3 Write the short notes on following. 15
- a) Chemical synthesis of DNA
 - b) shot gun cloning
 - c) DNA sequencing
- Q.4 Explain the Enzyme used in genetic engineering 15
- Q.5 Write the short notes on following. (Any 3) 15
- a) Write chemical synthesis of DNA
 - b) Pathway of E.Coli
 - c) Role of racA,recBCD
 - d) Nomenclature of type II endonucleases
- Q.6 Explain in detail Restriction endonuclease ,type I,II,III 15
- Q.7 Explain in detail Yeast artificial chromosome and expression vector 15

Master of Science in Microbiology Examination: May - 2023

| Day & Date | Semester | Subject Name | Time | Code | Marks |
|----------------------|-----------------|--------------------|----------------------------|------|-------|
| Monday 08-05-2023 | I (Repeater) | Bioinstrumentation | 02:30 PM To 05:00 PM | 1104 | 75 |

- Instructions: 1) Question No. 5 is compulsory.
2) Attempt any 4 from the remaining.
3) All questions carry equal marks.

Q.1- Explain in detail principle and working of pH meter and Laminar-air flow. 15M

Q.2- Describe in detail Working of High Pressure/Performance Liquid Chromatography (HPLC). 15M

Q.3- Explain the basic principles of electrophoresis and write about starch gel agarose. 15M

Q.4. Write about the theory and application of paper electrophoresis and native along with denaturing PAGE. 15M

Q.5. Write the short notes (Any 3) 15M

- 1) Sedimentation Velocity.
- 2) Ion Exchange affinity.
- 3) Isoelectric focusing.
- 4) Raman Spectroscopy.

Q.6. Explain in detailed process of autoradiography along with its applications. 15M

Q.7. Write about the detection and measurement of radioactivity using ionization chamber. 15M

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| Day & Date | Semester | Subject Name | Time | Code | Marks |
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| Wednesday 03-05-2023 | (Repeater) | Microbial Physiology & Development | 2:30 PM To 5:00 PM | 1102 | 75 |

Instructions: 1) Q.5 is compulsory.
 2) Attempt any 4 from the rest.
 3) All questions carry equal marks.

- Q.1** Explain in detail Sporulation With its stages & influence factor on Sporulation. 15
- Q.2** Write Note on photosynthetic Microorganism & types pigment produced by microorganism & noncyclic photophosphorylation. 15
- Q.3** Write note on Bacterial aerobic Respiration & Components of electron transport chain 15
- Q.4** Explain the structure and organization of cell membrane with fluid mosaic Model 15
- Q.5** Write the short notes on following. (Any 3) 15
- a) ETC in Chemo-lithographic microorganism.
 - b) Heat resistance in sporulation
 - c) Ammonium oxidation by membrane of genus nitroso groups
 - d) Different mechanism of active diffusion
- Q.6** Write note on CO₂ Fixation Pathway. 15
- Q.7** Explain Ferrous & Sulfide by Thiobacillus Species 15.

Master of Science in Microbiology Examination: May - 2023

| Day & Date | Semester | Subject Name | Time | Code | Marks |
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| Thursday 04-05-2023 | I (Repeater) | Molecular Immunology | 02:30 PM To 05:00 PM | 1101 | 75 |

- Instructions:**
- 1) Question No. 5 is compulsory.
 - 2) Attempt any 4 from the remaining.
 - 3) All questions carry equal marks.

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| Q.1 | What is transplantation immunology? Discuss GVH reaction. | 15 |
| Q.2 | How are "B" and "T" lymphocytes formed? Elaborate on difference between "T" & "B" lymphocytes. | 15 |
| Q.3 | a) Discuss importance of lysozyme & nuclein in cell mediated immune response. | 07 |
| | b) What are opsonins? How do they benefit phagocytosis? | 08 |
| Q.4 | Schematically explains haematopoiesis in bone marrow. | 15 |
| Q.5 | Write short notes on (Any 3) | 15 |
| | a) Autoimmunity | |
| | b) Complement fixation | |
| | c) Lymphocyte trafficking | |
| | d) Antigen processing and presentation | |
| Q.6 | Write on mechanism of graft rejection and prevention of graft rejection. | 15 |
| Q.7 | Explain in detail serological methods for detection and quantization of viruses including Hepatitis. | 15 |

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| Day & Date | Semester | Subject Name | Time | Code | Marks |
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| Saturday 06-05-2023 | I (Repeater) | Bioenergetics & Molecular Enzymology | 2:30 PM To 5:00 PM | 1103 | 75 |

Instructions: 1) Q.5 is compulsory.
2) Attempt any 4 from the rest.
3) All questions carry equal marks.

- Q.1 Brief account importance of enzyme kinetics and factor affecting rate of enzyme? 15
- Q.2 Explain in detail structure of TCA cycle? 15
- Q.3 Write the short notes on following. 15
- Ribozymes
 - Isoenzyme
 - Polyhydroxybutyrate (PHB) production
- Q.4 Explain the Michelis- Menton equation and it's significance? 15
- Q.5 Write the short notes on following. (Any 3) 15
- Biosynthesis of purines
 - Fermentation of glutamate acid
 - Biosynthesis of pyrimidines
 - Allosteric enzymes.
- Q.6 Explain in detail classification of enzyme with suitable example? 15
- Q.7 Explain in detail Microbial growth on CI compounds? 15