Micro Biology (P.G.)

[CBCS]

M.Sc. First Semester End Examination-2023

(Regular & Supplementary Paper)

PAPER- MCB-103

[Biochemistry, Biophysics and Bioinstrumentation]

Full Marks: 40 ***Time: 02 Hrs***

The figures in the right-hand margin indicate marks.
Candidates are required to give their answers in their own words as far as practicable.
Illustrate the answers wherever necessary.

Group A (MCB 103.1)

Full Marks 20

1. Answer any two questions of the following: **2x2= 4**

a. What are meant MAJOR and MINOR groove? 1+1

b. Why DNA is stable in Alkaline conditions? 2

c. Give example of a derived lipid with example. 1+1

d. Which α -amino acid does not have a chiral Carbon Atom? 2

2. Answer any two questions of the following: **2x4= 8**

a. Describe the mechanism of protein sequencing by Edman degradation. 4

b. Briefly describe and schematically represent fluid-mosaic model of plasma membrane structure. 4

c. Write the equation of Line weaver-Burk plot and explain the parameters. Write a brief note on allosteric regulation of an enzyme. 2+2

d. What do you mean by facilitated diffusion? Write the Ramachandan plot. 1+3

3. Answer any one question of the following: 1x8=8

a. What is the difference between a polypeptide and a protein? What are the interactions that stabilize the proteins? 2+6

b. What do you mean by peptide mass finger printing? Describe the method of Sanger DNA sequencing. 3+5

Group B (MCB 103.2)

Full Marks 20

1. Answer any two questions of the following: 2x2= 4

a. Write the theory of solvent system for acid and base. 2

b. Define Gibbs free energy. 2

c. What is meant by mass to change ratio? 2

d. What is the half-life of radioisotope? Does it depend on the amount radioactivity? 1+1

2. Answer any two questions of the following: 2x4= 8

a. Write down the Law of thermodynamics. 4

b. Explain the principle of thin layer chromatography and discuss its advantages for separating small molecules. 2+2

c. What are meant by gradient and isocratic elution in HPLC? How patticle size and column length influence chromatographic resolution? 2+2

d. How better resolution can be achieved in MALDITOF mass spectrometry? Write two matrix names with their functions. 2+2

3. Answer any one question of the following: 1x8=8

a. Describe the Henderson equation for acidic buffer. Write down the applications of buffer in biological systems. 4+4

b. What is liquid Scintillation cocktail and how it helps to measure radio activity in liquid Scintillation counter? Write down the difference between TEM and SEM. How you can image live cells? 3+3+2

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