2018

M.Sc. 1st Seme. Examination

MICROBIOLOGY

PAPER—MCB-103

Full Marks : 40

Time : 2 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Group–A

[Marks : 20]

1. Answer any *two* questions : 2×2

(a) Write the name of the bonds which stabilizes protein structure.

(b) How entropy is related with the spontaneous nature of any process ?

(c) How can range of usage of a light/optical microscope be extended ?

(d) State the principle of affinity chromotography.

2. Answer any *two* questions : 2×4

(a) State the process of microbiological sample preparation for SEM. Mention the use of grid in TEM. 3+1

(b) 'Water is a universal solvent' — justify the statement. What are the ionic products of water ? 3+1

(c) What is normal phase and reverse phase chromatography ? Differentiate between cation exchanger and anion euchanger. 2+2

(d) A monochromatic light passed through a solution having 1 cm path length and 40% transmittance is recorded. What will be the concentration of the solution ?
(Given $\varepsilon = 6000\ M^{-1}\ cm^{-1}$)
What is emission spectroscopy ? 3+1

3. Answer any *one* question : 1×8

(a) State the principle and applications of UV-VIS spectroscopy. Write about different detector used in HPLC. Why do transmission electron microscope have better resolution than bright field microscope ?
(2+2)+2+2

(b) Write short note on :

(i) Applications of radioisotope,

(ii) Applications of GLC,

(iii) Atomic force microscope. 3+2+3

Group–B

[Marks : 20]

1. Answer any *two* questions : 2×2

(a) Which molecule is abundant in a living cell and why ?

(b) What do you mean by palindrome sequence in DNA ?

(c) State the composition of a phospholipid.

(d) What do you mean by redox potential and redox couple.

2. Answer any *two* questions : 2×4

(a) What is zwitterion ? State the acid-base properties of glutamic acid. 1+3

(b) Write the characteristics of α-helix. How collagen structure is stabilized ? 2+2

(c) How fluidity of a membrane is restored ?

(d) Describe the allosteric modulation of an enzyme.

3. Answer any *one* question : 1×8

(a) State the components of electron transport chain and how electrons are flow through it. 3+5

(b) Compaired between compititive and non-compititive enzymatic inhibition. 8