

2008**M.Sc.****1st Semester Examination****ZOOLOGY****PAPER—Z-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**(Microbiology)**

1. Answer any two questions : 2×2
 - (a) Differentiate Protista from Chromista.
 - (b) What are the two analytic methods by which bacterial growth can be measured ?
 - (c) Mention the purpose of Indicator medium.
 - (d) 'Coliforms' as indicators of aquatic pollution.

2. Answer any two of the following : 4×2
 - (a) Name the pigments commonly present in Algae.
Highlight role of algae in soil environment.

(Turn Over)

- (b) How do autotrophs & heterotrophs vary in using carbon source? What are capnophiles?
- (c) Briefly explain how 'Benchtop tests' are useful in bacterial identification. Cite any two examples.
- (d) Classify bacteria depending upon their temperature requirement. What is the utility of a Plasmid?

3. Answer any one of the following : 8×1

- (a) (i) Mention advantages of using liquid culture media.
- (ii) Draw the growth pattern of Facultatively anaerobic bacteria in a test tube.
- (iii) Define Mycoplasma.
- (iv) Briefly classify Viruses on the basis of Host preferences. 2×4
- (b) (i) Describe the stages of Bacterial spore formation with the help of figure.
- (ii) State the junctions of fimbriae.
- (iii) Illustrate the peptidoglycan networking in cell wall of Bacteria. 4+2+2

Group—B

(Biophysics)

1. Answer any two questions : 2×2
- (a) Explain Gibb's Free energy.
 - (b) Why the buffers of our body fluid have a high salt / acid ratio ?
 - (c) Why some plants stand erect on watering ?
 - (d) Notes on : β^+
2. Answer any two questions : 4×2
- (a) Write briefly on the role of pressure gradient and resistance on the volume flow in a closed vascular system. 4
 - (b) A sample of biological fluid freezes at -0.56°C . Calculate its osmotic pressure, in mm of Hg, at 37°C . [Kf for water is -1.858°C , $R = 0.082$ litre atmosphere] What is the difference between tonicity and osmoticity. 3+1
 - (c) Membrane proteins can be solubilized and purified by detergents. — Explain. 4
 - (d) Write notes on (any two) : 2×2
 - (i) Phospholipid mobility.
 - (ii) Scintillation counter.
 - (iii) FRAP technique.
 - (iv) Dialysis.

3. Answer any *one* question : 8×1

- (a) (i) Write briefly on the properties of colloids.
 (ii) Give a short account of asymmetric distribution of membrane lipids.
 (iii) Mention the properties of α -particles. 4+2+2

(b) (i) State the differences between tonicity and osmoticity. State when the two solutions become both isosmotic and isotonic. $1\frac{1}{2}+1\frac{1}{2}$

(ii) What is absorption spectroscopy? What are the range of wave length for visible and UV-light? $1\frac{1}{2}+1\frac{1}{2}$

(iii) Distinguish between : 2

(4_{n+2}) Series

vs.

(4_{n+3}) Series. [n = An integer]
