This question paper contains 4+1 printed pages]

Your Roll No. .....

1026

B.Sc.(Hons.)/I C

MICROBIOLOGY—Paper II

(Biochemistry and Instrumentation)

(Admissions of 2004 and onwards)

Time : 3 Hours *Maximum Marks : 60*

(Write your Roll No on the top immediately on receipt of this question paper.)

Attempt *five* questions in all, selecting at least *two* questions from each Section.

All questions carry equal marks.

Section A

1. Justify the following (any *four*) : 4×3=12

(*i*) All enzymes follow Michealis-Menton Kinetics.

P.T.O.

(*ii*) Techniques of protein purification are based upon their properties.

(*iii*) Biological membranes are predominately made up of phospholipids

(*iv*) All sugars are optically active.

(*v*) Primary structure of a protein determines its biological activity.

2. (*a*) Draw structure of (any *three*) : 3×3=9

(*i*) Peptidoglycan

(*ii*) Cholesterol

(*iii*) Adenosine Triphosphate

(*iv*) Cerebroside.

(*b*) Name the Scientist who (any *three*) : 3×1=3

(*i*) first sequenced insulin.

(*ii*) gave lock & key mechanism of enzyme specificity.

(*iii*) gave 3-D structure of Myoglobin.

(*iv*) gave experimental evidence for complementarity of DNA.

3. Differentiate between (any *four*) :

(*i*) Isoenzymes and Multienzymes

(*ii*) A-DNA and Z-DNA

(*iii*) Epimers and Anomers

(*iv*) Homopolysaccharides and Heteropolysaccharides

(*v*) Fibrous and Globular proteins. 4×3=12

4. (*a*) Compounds with thioester linkage release more energy than those with acyl linkage why ? 3

(*b*) What is the significance of Handerson-Hasselbach equation ? 3

P.T.O.

(*c*) What are difficult ways in which enzyme activity can be regulated ? 3

(*d*) Comment upon unusual nature of collagen structure. 3

Section B

5. (*a*) Define the following terms (any *three*) : 3×1=3

(*i*) Liposome

(*ii*) Dialysis

(*iii*) Svedberg units

(*iv*) Mitoplast.

(*b*) Write the principle underlying autoradiography. Which radio label would you use to track the DNA bands in an electrophoretic gel by autoradiography and why ? 4

(*c*) List the function of golgi apparatus. 2

(*d*) What does SDS PAGE stand for ? Write its application. 3

6. (*a*) Differentiate between the following (any *three*) :

(*i*) Prokaryotic and eukaryotic ribosome

(*ii*) Affinity and Gel-filtration chromatography.

(*iii*) Absorption and Action spectrum.

(*iv*) Actin and myosin. 3×3=9

(*b*) Comment on the asymmetry of biological membranes. 3

7. Write the principle and application of the following techniques (any *three*) :

(*i*) Ultracentrifugation

(*ii*) Spectrophotometry

(*iii*) GLC

(*iv*) Isoelectric focussing. 3×4=12