PG/IS/MCB-104/13

M.Sc. 1st Semester Examination, 2013

MICROBIOLOGY

PAPER—MCB-104

Full Marks : 40

Time : 2 hours

Answer any **two** questions from each Group

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

[*Marks* : 20]

Answer any *two* questions

1. (*a*) Write the difference between α-helix and β-sheet. 3

(*b*) Which factor favours their formation ? 2

(*c*) Give an experimental evidence justifying the occurrence of specific bonding among amino acids is very essential for restoration of proteins function. 5

2. (*a*) Describe the kinetic properties of mixed substrate inhibition of an enzyme. 4

(*b*) Why kinetics of allosteric enzyme is differ from Michaelis-Menten equation ? 4

(*c*) Write the components of electron transport chain with their Prosthetic group. 2

3. Write short notes on (any *four*) : $2\frac{1}{2} \times 4$

(*i*) Abzyme

(*ii*) Role of periplasmic binding protein

(*iii*) G-proteins in signal transduction

(*iv*) Proton-motive force

(*v*) Factors affecting fluidity of membrane

(*vi*) Cleavage site for –

(*a*) Cyanogen bromide

(*b*) Pepsine

(*vii*) Phosphorylation of protein.

GROUP – B

[*Marks* : 20]

Answer any *two* questions

1. (*a*) Why FAD^+(and not NAD^+) act as electron donor in succinic dehydrogenase catalysis ? 4

(*b*) Write down only the oxidative phase of pentose phosphate pathway. 3

(*c*) State the importance of transketolase and transaldolase in pentose phosphate pathway. 3

2. (*a*) Describe the steps of phospholipid biosynthesis. 5

(*b*) Describe why bacteria and fungus use different pathway for lysine biosynthesis. 3

(*c*) State the importance of siderophores. 2

3. Write short notes on (any *four*) : $2\frac{1}{2} \times 4$

(*i*) Hexose phosphoketolase pathway

(*ii*) Importance of isoprenoids

(*iii*) Brief idea of purine biosynthesis

(*iv*) Energy efficiency of Entner Doudoroff Pathway

(*v*) Covalent modification of glutamine synthase

(*vi*) Enzymes of β-oxidation

(*vii*) Cra mediated metabolic control.