2016

M.Sc. 1st Semester Examination

MICROBIOLOGY

PAPER—MCB-104

Full Marks : 40

Time : 2 Hours

The figures in the margin indicate full marks.

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

Illustrate the answers wherever necessary.

Use separate Answer-scripts for Group-A & Group-B

Group—A

Answer any *two* questions.

1. (a) What are the characteristics of secondary structure of proteins ?

   (b) State briefly about Ramachandran plot and its importance.

   (c) Write short note on acetylation and methylation of protein modification. 2+(3+2)+3

2. (a) Discuss the effects of compititive and uncompititive inhibition by mentioning the changes in V_{max} and K_m.

   (b) What do you mean by catalytic efficiency of an enzyme ?

   (c) Write the roles of vitamins on the activation of enzymes. 6+2+2

3. Write short notes on (any *five*) :

   (a) Abzyme ;

   (b) Oxidative and substrate level phosphorylation ;

   (c) Cleavage sites of pepsins and hydroxylamine ;

   (d) ATP generates during ETC ;

   (e) ATP binding cassette transporter ;

   (f) Phospholipids ;

   (g) Haworth projections ;

   (h) Photosynthetic pigments. 2×5

Group—B

Answer any *two* questions.

1. (a) Glucose-6-phosphate is a common intermediate of different pathways of glucose metabolism — justify it.

(b) State the significance of pentose phosphate pathway.

(c) Write the name of two microorganisms capable to metabolize glucose through phosphoketolase pathway.

(d) How EMP pathway is regulated ?

2+3+1+4

2. (a) State the significance and difference between the lysine biosynthetic pathways of bacteria and fungi.

(b) Briefly write the steps of synthesis of palmitate in biological system.

(c) Write the metabolic role of 5-phosphoribosyl 1-pyrophosphate.

(d) Briefly state the regulatory mechanism of pyrimidine biosynthesis.

$(1\frac{1}{2}+1\frac{1}{2})$+4+1+2

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

(a) Pyruvate dehydrogenase complex ;

(b) GS-GOGAT system ;

(c) Anabolic role of TCA cycle ;

(d) PHB : biosynthesis and application ;

(e) Protecting mechanisms to avoid inactivation of nitrogenase by O_2 ;

(f) Cellulolytic enzymes.