

2015

M.Sc.

1st Semester Examination

MICROBIOLOGY

PAPER—MCB-101

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.

Answer any two questions from each group.

Group—A

[Marks : 20]

Answer any two questions.

1. (a) What is lysozyme? State its mode of action and compare with that of Penicillin.
- (b) Name three specific channel proteins and state their function.

(Turn Over)

- (c) Write the mechanism of killing of bacteria by alcohol.
- (d) Why theory of abiogenesis is not Considered ?
- (e) What is metagenome ? How metagenomic approaches help to know the unknown bacteria ?

2+2+1+1+(1+3)

2. (a) Mention the variations found in Murein Structure.
- (b) Write the structures of the repeating subunits of the spore Cortex peptidoglycan.
- (c) Give a flow chart of the pathway of biosynthesis of dipicolinic acid and state its importance.
- (d) State the Bio-chemical events that occur during endospore formation.
- (e) What is the structure of membranes of hyperthermophilic Archaea and why might this structure be useful for growth at high temperature ?

1+2+2+3+2

3. (a) Write the molecular mechanisms of bacterial cell division in relation to divisome complex.

- (b) Define the equation $\mu = \frac{\mu_{\max} S}{K_S + S}$.

and state the expression of cell number or cell mass in relation to $S \gg K_S$ and $S \ll K_S$.

- (c) A bacterial culture is grown using octadecane as the sole source of carbon and energy. The cell yield value is determined by dry weight analysis to be 1.49. What percentage of the substrate carbon will be found as cell mass and as CO_2 . 3+3+4

Group—B

[Marks : 20]

Answer any *two* questions.

1. (a) Elucidate the characteristic of "ICTV classification of viruses" citing suitable examples of each group.
- (b) Tissue tropism is specific for pathogenesis of viruses— explain with suitable examples.
- (c) Briefly describe the method of Acid end point furassay of virus. (3+2)+3+2

2. (a) Describe the pathogenesis of polio virus in human.
- (b) What do you mean by "Viroids"? Give explain of viroid disease.
- (c) Describe the antiviral mode and mechanism of action of Acyclovir against Herpes Virus. 5+(1+1)+3

3. (a) Explain with suitable examples, the phenomenon of "Lysogenic Conversion". 3+1
- (b) Write short notes in any *two* : 2×3
- (i) He La Cells
 - (ii) Cultivations of Plant Virus.
 - (iii) Primary cell line.
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