

**2018**

**M.Sc. 1st Seme. 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.*

*Illustrate the answers wherever necessary.*

**Group-A**

[Marks : 20]

1. Answer any *two* questions : 2×2
- (a) What are OTU and numerical taxonomy ?
  - (b) What is DNA finger printing ? Write with an example.
  - (c) Why majority of the microorganisms are uncultured till date ?
  - (d) What is ribotyping ?

*(Turn Over)*

2. Answer any *two* questions : 2×4
- (a) Write a short note on archaea with special emphasis to major physiological groups within this domain.
- (b) (i) Define  $T_m$  of a DNA sample with graphical representation.
- (ii) How does nucleic acid composition of DNA related to  $T_m$  ? 2+2
- (c) (i) Mention 3 general characteristics each of the Enterobacteria and Mycoplasma along with their distribution pattern in the 2nd edition of Bergey's Manual of Systematic Bacteriology.
- (ii) Mention the importance of FAME analysis. 2+2
- (d) What is Bergey's Manual of systematic Bacteriology? What is the basis of arrangement of different groups of bacteria and archaea in its recent volume? Name atleast four major groups of bacteria having culturable representatives. 1+1+2
3. Answer any *one* question : 1×8
- (a) (i) Describe the contribution of Louis Pasteur in disproving the theory of spontaneous generation.
- (ii) What is theory of Abiogenesis?

- (iii) Give a brief description of the Urey-Miller experiment with pictorial representation.
- (iv) Mention the compounds formed in the above experiment. 3+1+3+1
- (b) Give a brief description of Winogradsky
- (i) Column.
- (ii) What is enrichment bias ?
- (iii) Define FISH.
- (iv) What is CARD-FISH and how is it helpful in microbial community analysis ? 3+1+1+3
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### Group-B

[Marks : 20]

1. Answer any *two* questions : 2×2
- (a) What are Satellite Viruses ?
- (b) What is tissue tropism in Virus ? Give example.
- (c) Define Cytopathic effect (CPE). Mention any two importance of CPE.
- (d) What do you mean by plus strand and minus strand RNA Virus ?

2. Answer any *two* questions : 2×4
- (a) Differentiate between lytic cycle and lysogenic cycle. State the importance of lysogenic conversion in human disease. 2+2
  - (b) Describe the Haemagglutinin assay method for quantitation of viruses. 4
  - (c) Elucidate the principle and importance of plaque assay in virology. 2+2
  - (d) Name one disease caused by retrovirus and mention the mode of replication of Retroviruses. 1+3
3. Answer any *one* question : 1×8
- (a) Mention replicative strategies employed by animal DNA viruses.
  - (b) Describe the mode of infection and pathogenesis of influenza virus. 4+4
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