

OLD

2015

**Part-I 3-Tier
MICROBIOLOGY**

PAPER—I

(Honours)

Full Marks : 90

Time : 4 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.

Group—A

Answer any *two* questions of the following : 2×15

1. (a) State the contribution of Robert Koch in the field of microbiology. 5
- (b) Write down the importance of microbes as producers, consumers and degraders. 2×3
- (c) Write down two harmful microorganisms by mentioning their harmfulness. 2+2

(Turn Over)

2. (a) Classify Algae according to Smith mentioning General Characters of different classes. 10
- (b) Write note on different types of fungal spors. 5
3. (a) What is the endosymbiotic theory of the origin of mitochondria and chloroplasts in eukaryotic cells? 4
- (b) What are the distinguishing features of Protozoa, algae, fungi and bacteria? 8
- (c) Why one viruses studied with micro-organisms? 3
4. (a) What is 'resolving power' of a microscope and how is it related to maximum useful magnification? 4
- (b) How do the chemical sources of energy differ between the Chemoantotrophs and Chemoheterotrops? 4
- (c) What are the three groups of micro-organisms based on temperature range within which they grow? 6
- (d) What is batch culture? 1

Group—B

Answer any *five* questions : 5×8

5. Briefly describe the ultrastructure of a Gram negative bacteria cell wall with labelled diagram. 8
6. (a) Give the definitions of : 4
- (i) Spheroplast ;
- (ii) Cyst ;
- (iii) Magnetosome ;

(iv) Gas Vacuole.

- (b) Describe the principle of Gram Staining. . . 4
7. (a) Name the disease caused by *Entamoeba*, and describe the control measures of the disease caused by it. 1+3
- (b) Draw the life cycle of *Plasmodium*. 4
8. Write the reproduction process of *Penicillium* and state the economic importance of *Saccharomyces*. 5+3
9. Briefly discuss the process replication of TMV. 8
10. (a) What are the differences between bacterial growth and the growth of higher organism? 5
- (b) Why number of bacteria remain constant in the stationary phase of growth of bacteria? 3
11. Briefly describe the processes of bacterial growth measurement. 8
12. Briefly describe the process of Chemotaxis in bacteria. 8

Group—C

Answer any five questions : 5×4

13. How can a bacterial culture be preserved? Name one centre where these culture are preserved. 3+1

14. A fresh medium is inoculated with 1,000 bacterial cells. After 48 hours the number becomes 64,000. If the bacterium maintains exponential growth rate, what is its generation time? 4
15. What is the pattern of microbial death when a bacterial population is exposed to a killing agent? 4
16. Why Whillaker and Carl Woese are famous? 2+2
17. Write down the economic importance of *Laminaria* and *Sperulina*. 2+2
18. (a) Enumerate the desirable characters of an antimicrobial agent. 2
(b) What is the distinction between sterile and sanitized? 2
19. (a) Write the mode of action of chlorine as antimicrobial agent. 2
(b) When filtration is used as antimicrobial process? 2
20. Write the differences between :
Prokaryotic cell and Eukaryotic cells. 4
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