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53 (FPT 301) BMCB

2017

FOOD PROCESSING TECHNOLOGY

Paper : FPT 301

(Basic Microbiology)

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

Answer **any five** questions.

1. (a) Briefly describe the "theory of spontaneous generation" in comparison with "Germ theory". 5
- (b) What is the difference between light microscope and electron microscope? Explain the magnification of an object through light microscope using a schematic diagram. 3+5
- (c) Why does sterilization by irradiation is also termed as "radappertization"? What is the mechanism of antimicrobial action involved in irradiation? Briefly explain heat sterilization process in a simple batch retort. 1+2+4

Contd.

2. (a) Explain structural difference between cell walls of Gram positive and Gram negative cells using appropriately labeled schematic diagrams. 10
- (b) Write short notes on **any two** of the following: 2×5
- (a) Endospore
 - (b) Bacterial flagella
 - (c) Peptidoglycan.
3. (a) Elaborate on structure of Bacteriophage and functions of its different structural components. Sequentially describe their life-cycle through bacterial cell lysis. 6+5
- (b) Describe the life cycle of the parasite *Plasmodium*. 5
- (c) Give brief accounts of **any two** of the following: 2×2
- (a) Gas vacuoles
 - (b) Plasmid
 - (c) Differential medium.
4. (a) How does bacterial ribosome operate to ensure necessary protein synthesis? 8

- (b) Briefly elaborate on the "Swan-neck flask" experiment to prove 'Germ' theory. How did Leeuwenhoek described bacterial cells for the first time ?
5+2
- (c) Elaborate on antibiotic actions against bacterial cell wall. 5
5. (a) Describe structure of bacterial DNA. What are plasmids and what are their significance ? 10+2
- (b) Discuss the classifications of the family "Fungi". 8
6. (a) What are photoautotrophs ? Discuss with example. 3
- (b) Discuss the differences between the following : 4×2
- (i) Dark field and Bright field microscopy
- (ii) Eukaryotic and Prokaryotic cells.
- (c) Discuss the carbon cycle and nitrogen cycle as microorganism contribute to them. Give an example of bacteria capable of fixing atmospheric nitrogen. 8+1

7. (a) Describe the different mechanisms of membrane transport performed by bacterial cells. 15
- (b) What is the cause of Creutzfeldt-Jakob disease (CJD), and how does the infection occur? Who coined the term "Prion"? 4+1