

Total number of printed pages-5

53 (FPT 301) BMCB

2015

BASIC MICROBIOLOGY

Paper : FPT 301

Full Marks : 100

Time : Three hours

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

Answer **any five** questions

1. (a) What is micro-organism? Explain the germ theory of disease. 1+2=3
- (b) Define synthetic medium giving suitable example. 4
- (c) What do you mean by spontaneous generation? Explain in brief how the theory of spontaneous generation was disproved. 2+3=5
- (d) Explain how bacteria are classified according to their form. 6
- (e) What is Active transport? 2

Contd.

2. (a) What are the processes to conduct simple staining? What are the reagents used in Gram staining and what is their purpose? $4+2+2=8$

(b) Define Enrichment culture. What is the importance of culturing microbes? $1+3=4$

(c) Describe the function of each of the following in the Gram stain.

(i) Primary stain

(ii) Mordant

(iii) Decolorizer

(iv) Counterstain. 4

(d) What is solidifying agent? What are the unique properties of agar? 2

(e) Give reason why synchronous growth should take place in microbial growth? 2

3. (a) What is pure culture? Explain the most common method to obtain a pure culture. $1+3=4$

(b) Define the following terms :

- (i) Sterilization (ii) Disinfection
(iii) Antisepsis.

What are the common sterilization methods to remove bacteria and bacterial spores ? $2+2+2+4=10$

(c) What are the similarities between viroids and prions ? 2

(d) Give *two* characteristics of prokaryotic organisms. 2

(e) What is the function of flagella and pili in a bacterial cell ? 2

4. (a) Explain the contribution made by Pasteur and John Needham in the development of microbiology.

$2+2=4$

(b) Define Lysogeny. Describe all the steps involved in the lysogenic cycle. 7

(c) What is Differential media ? Give examples. 3

(d) Explain the standard bacterial growth curve. 4

- (e) What is Antibiotic resistance? 2
5. (a) Draw and label the structure of a bacterial cell. 4
- (b) What is Chemotherapy? List the types of chemotherapy drugs with their mode of action. 7
- (c) Explain reducing medium giving suitable examples. 3
- (d) Differentiate between : $2 \times 2 = 4$
- (i) Pour and spread plate
- (ii) Bright-field and Dark-field microscope
- (e) What is the advantage of using solid medium over liquid broth? 2
6. (a) What is Bio-film and how it is beneficial? 4
- (b) Explain colony morphology. 4
- (c) Differentiate between Incubation and Inoculation. 2
- (d) Write a brief note on industrial uses of bacteria. 5
- (e) Explain the characteristics of Gram +ve and Gram -ve bacteria. 5

7. (a) Write *any two* ways of survival mechanism of bacteria. 4
- (b) What are Anti-microbial agents? What are its uses? 4
- (c) Draw a model of facilitated diffusion. 4
- (d) Write a brief note on : **(any two)** 2x3=6
- (i) Methanogenic bacteria
 - (ii) Macro elements
 - (iii) Cyanobacteria
 - (iv) Chemoautotrophs
- (e) What is the principle involved in autoclave? 2