

91548

B.Sc. 2nd Semester New Scheme Examination,

May-2017

BIOTECHNOLOGY

Paper-BT-202

Microbiology

Time allowed : 3 hours ] [ Maximum marks : 40

*Note : Question No. 1 is compulsory. Attempt five questions in all, selecting one question from each unit. All questions carry equal marks.*

1. (a) Give the contributions of (any two)
- (i) Paul Ehrlich
  - ~~(ii)~~ Robert Koch
  - (iii) Louis Pasteur
- (b) Define (any four)
- ~~(i)~~ Stationary phase
  - (ii) Selective media
  - ~~(iii)~~ Amphibolic pathway
  - ~~(iv)~~ Endospore
  - (v) MPN count

**Unit-I**

- ~~2~~ (a) Describe different theories of the evolution of the microbes.
- ~~(b)~~ Differentiate between a prokaryotic and eukaryotic cell. Draw a well labeled diagram of each.

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3. (a) Give the salient features of a bacterial and fungal cell. Draw a well labeled diagram.
- (b) Define Microbial Phylogeny. Briefly elaborate upon the current system of microbial classification.

### Unit-II

4. Elaborate upon :
- (i) Pure culture and enrichment culture methods
  - (ii) Nutritional types of microorganism
5. (a) Differentiate between :
- (i) Selective media and differential media
  - (ii) Spread plate and streak plate
  - (iii) Photoorganoheterophy and Chemolithoheterophy
- (b) What are growth factors.

### Unit-III

6. (a) Briefly explain the various stages of Krebs cycle.
- (b) Describe how the two different kinds of continuous culture systems operate. What is the dilution rate ?

7. (a) Define CFU. Briefly describe any two techniques by which microbial population numbers may be determined.
- (b) Describe in detail how does transduction occur. Also comment on its two types.

#### Unit-IV

8. Discuss the role of microorganism in (*any two*) :
- (i) Petroleum industry
  - (ii) Food industry
  - (iii) Pollution of water
9. (a) What are coliforms. How is fecal contamination of the water detected ?
- (b) Elaborate upon the various physical and chemical methods employed for the control of microorganisms ?