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MBCE-014

M. SC. (BIOCHEMISTRY) (MSCBCH)

Term-End Examination

December, 2024

MBCE-014 : MICROBIOLOGY

Time : 3 Hours

Maximum Marks : 100

Note : Attempt any **five** questions. All questions carries equal marks.

1. (a) Write the contributions of the following scientists : 5×2=10

(i) Antonie van Leeuwenhoek

(ii) Louis Pasteur

(iii) Robert Koch

(iv) Joseph Lister

(v) Sir Alexander Fleming

(b) State differences between bacteria and eucarya. 5

- (c) Discuss different hierarchical levels of microbial taxonomy. Illustrate with an example. 5
2. Write *five* characteristic features of each of the following : 4×5=20
- (i) Algae
 - (ii) Bacteria
 - (iii) Fungi
 - (iv) Viruses
3. (a) What are antimicrobial agents ? How do they exert antimicrobial action ? 10
- (b) Write notes on the following : 2×5=10
- (i) Phylogenetic tree
 - (ii) Phenotypic characterization of microorganisms
4. (a) Write characteristics and example of the following cell culture media : 4×2 $\frac{1}{2}$ =10
- (i) Solid medium
 - (ii) Enriched medium
 - (iii) Differential medium
 - (iv) Simple medium

- (b) (i) Differentiate between positive and negative staining. 5
- (ii) What is a laminar air flow ? Describe its basic components. 5
5. (a) Write notes on the following diseases :
2×5=10
- (i) Gastroenteritis
- (ii) Rabies
- (b) Describe the mechanisms of host resistance. 10
6. (a) (i) Discuss about antigenic variation in bacteria and its significance. 5
- (ii) How do microbes circumvent phagocytosis ? 5
- (b) Explain the mechanism of action and application of the following drugs : 2×5=10
- (i) Sulfonamides
- (ii) Acyclovir
7. Write short notes on the following : 4×5=20
- (a) Phenol coefficient test
- (b) Lichen ecosystem

- (c) Pour plate method of microbial isolation
 - (d) Bacteriophage typing
8. (a) (i) Describe the applications of microorganisms in fermentation. 5
- (ii) Justify this statement 'Survival and healthy life of human is intimately linked to their microbial partners.' 5
- (b) Explain Romanowsky effect. Write the applications of Romanowsky stains. 10

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