Seat No. : _____

JA-106

January-2021

B.Sc., Sem.-III

201 : Micro-Biology
(Microbial Physiology)
(New)

Time : 2 Hours] **[Max. Marks : 50**

Instructions : (1) Students should write the answers from the questions paper applicable to them, either "New Course" or "Old Course" and it must be mentioned at the beginning of the answer paper.

(2) Attempt any **three** questions out of **eight** questions. Question No. **9** is compulsory.

(3) Draw figures wherever necessary.

(4) Figures to the right indicate marks.

1. Describe the chemical structure, properties, classification and biological significance of carbohydrates. **14**

2. (A) Discuss the properties and biological importance of proteins. **7**

   (B) Write a note on properties and biological importance of lipids. **7**

3. Discuss the nomenclature and classification of enzymes. Describe the IUB system of enzyme classification. **14**

4. (A) Explain the mechanism of enzyme action. **7**

   (B) Write a note on the factors affecting enzyme activity. **7**

5. Describe in detail the microbial nutrient uptake mechanisms. **14**

6. (A) Write a note on : Classification of bacteria on the basis of Oxygen requirement for growth. **7**

   (B) Write a note on : Classification of bacteria on the basis of Temperature requirement for growth. **7**

7. Discuss the methods of reproduction in bacteria and describe new cell formation. **14**

8. (A) Write a note on mode of action of penicillin and streptomycin. **7**

   (B) Write a note on normal growth curve of bacteria. **7**

9. Give short and specific answers in **1-2** lines only : (any **eight**) **8**

   (1) What are oligosaccharides ?

   (2) Define : Peptide bond.

   (3) What are unsaturated fatty acids ?

   (4) What are the components present in a nucleotide ?

   (5) Why the enzymes are also known as biological catalyst ?

   (6) What are ribozymes ?

   (7) Give two differences between competitive and non-competitive inhibitors.

   (8) Name the German physiologist who first used the term enzyme ?

   (9) What is catabolism ?

   (10) What are precursor metabolites ?

   (11) What are barophilic microorganisms ?

   (12) Differentiate between antiporter and symporter transport mechanism.

   (13) What is Synchronous growth ?

   (14) What are sulfonamides ?

   (15) Name the organism producing polymyxin.

   (16) Why the bacterial cell enters into the stationary phase ?

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1. Describe in details various types of culture media. **14**

2. (A) Write a note on : Passive and Active nutrient uptake mechanism. **7**

   (B) Discuss the classification of bacteria on the basis of temperature requirement. **7**

3. Write a note on : Nomenclature and classification of enzymes. **14**

4. (A) Discuss the structure of enzymes. **7**

   (B) Describe the factors affecting enzyme activity. **7**

5. Write a note on : Mode of action of various chemotherapeutic agents. **14**

6. (A) Describe the normal growth curve of bacteria. **7**

   (B) Discuss the methods of reproduction in bacteria. **7**

7. Describe the chemical structure, properties, classification and biological importance of proteins. **14**

8. (A) Discuss the properties and biological importance of carbohydrates. **7**

(B) Write a note on : Properties and Biological significance of lipids. **7**

9. Give short and specific answers in **1-2** lines only (any **eight**) : **8**

(1) Differentiate between passive and facilitated diffusion.

(2) Name the ingredients in MacConkey's agar medium that makes it a selective as well as Differential medium.

(3) What are barophiles ?

(4) Define : Osmosis.

(5) Give two examples of extracellular enzymes.

(6) Differentiate between competitive and non-competitive inhibitors.

(7) What is apoenzyme ?

(8) Give examples of cofactors.

(9) Mention the importance of lag phase in bacterial growth.

(10) Define : Continuous growth.

(11) What is generation time ?

(12) Define : Chemotherapy.

(13) Enlist the energy rich compounds.

(14) Differentiate between saturated and unsaturated fatty acids.

(15) What is a peptide bond ?

(16) Differentiate between oligosaccharides and polysaccharides.