



Total No. of Questions: 4/18

Total No. of Pages: 2

**SECOND YEAR (B.Sc.)**

**MIC23101: Bacterial Physiology and fermentation technology  
(Semester III)**

**Program: B.Sc.Gen03**  
**Program Specific: Microbiology**  
**Course Type: DSC**  
**Paper: I**

**Credits: 2**  
**Time: 2 Hours**  
**Max. Marks: 30**  
**SET: A**

**Instructions to the candidate:**

- 1) All questions are compulsory.
- 2) Figures to the right indicate full marks.
- 3) Draw a well labelled diagram wherever necessary.

**SECTION: A**

**Q1) Answer the following**

**[5 X 1 = 5]**

1. Define anabolism.
2. What is an apoenzyme?
  - a) It is a protein portion of enzyme
  - b) It is a complete, biologically active enzyme
  - c) It is a nonprotein group
  - d) It is a prosthetic group
3. Which one of the following is not an example of biomass based products?
  - a) Bio-pesticide
  - b) Steroid
  - c) Bio-fertilizer
  - d) Probiotic
4. Explain importance of master culture.
5. Interpret the name of enzyme catalyzed interconversion of optical, geometrical or positional isomer.

**SECTION: B**

**Q2) Answer the following. (Attempt any 5/7)**

**[5 X 2 = 10]**

1. Explain the class hydrolase with one example.
2. Correlate production of primary and secondary metabolites with growth phases. Support the answer with suitable diagram.
3. Discuss induced fit model of enzyme catalysis.
4. Explain the distinct features of ED pathway.
5. Discuss advantages and limitation of batch fermentation.
6. Delineate the types of spargers.
7. Discuss antifoam agent. Enlist two examples of it.

**SECTION: C**

**Q3) Answer the following. (Attempt any 2/4)**

**[2 X 5 = 10]**

1. Discuss cofactors with suitable examples.
2. Diagrammatically represent oxidative phase of Hexose Monophosphate pathway.
3. Describe the effect of pH concentration on enzyme activity.
4. Summarize the protocol for preservation and maintenance of industrial strain by using liquid nitrogen method.

**SECTION: D**

**Q4) Answer the following (Attempt any 1/2)**

**[5 X 1 = 5]**

1. Draw, labelled a diagram of fermenter. Explain different parts of the fermenter with their functions.
2. Diagrammatically represent the preparatory phase of glycolysis.

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