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**SECOND YEAR (BSc)**  
**MIC23408: INDUSTRIAL MICROBIOLOGY**  
**(Semester III)**

**Program: MScMicro06**  
**Program Specific: Microbiology**  
**Course Type: VSC**  
**Paper: IV**

**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.
- 1) Draw a well labelled diagram wherever necessary.

**SECTION: A**

**Q1) Answer the following**

**[5 X 1= 5]**

1. Define “Pyrogens”
2. Explain the term “Auxotrophic mutant”
3. Discuss the term “SOP”.
4. Define downstream processing in the fermentation process.
5. Enlist any two GMP.

**SECTION: B**

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

**[5 X 2 =10]**

1. Define “scale up” in the fermentation process, enlist factors involved in scale up process.
2. Discuss types of mutation used in genetic modification.
3. Enlist various types of softwares used for designing an experiment.
4. Justify: ‘steam sterilization is more effective than dry heat sterilization’.
5. Enlist mechanical and non-mechanical methods of cell disruption.
6. Construct protocol for LAL test.
7. Explain the concept of IPR and Patent.

**SECTION: C**

**Q3) Answer the following/Write short notes on following (Attempt any 2/4)**

**[2 X 5 = 10]**

1. Discuss the term “media optimization”, add a note on “Plackett-Burman design.”
2. Explain in detail response surface methodology.
3. Discuss filtration in downstream processing.
4. Illustrate design of batch sterilization process.

**SECTION: D**

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

**[5 X 1 = 5]**

1. Explain principle and protocol for sterility testing.
2. Discuss strain improvement. Add a note on recombinant DNA technology.

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