

Seat No. : _____

DB-106

December-2013

B.Sc. (CBCS) Sem.-V

MI-304 : Microbiology

(Bioprocess Technology)

Time : 3 Hours]

[Max. Marks : 70

- Instructions :**
- (1) All questions carry equal marks.
 - (2) Mention your answer number clearly in margin.
 - (3) Draw diagrams wherever necessary.

1. Answer any **two** of the following : **14**
 - (i) Define the term fermentation. Describe the phases leading to present status of industrial microbiology.
 - (ii) Give schematic representation of a fermentation process and describe the component parts.
 - (iii) Enlist characteristics of an ideal industrial organism and describe the primary screening of aminoacid producers.
 - (iv) Briefly describe the parameters studied during the secondary screening.

2. Answer any **two** of the following : **14**
 - (i) Enlist criteria for an ideal fermentation medium and describe media formulation.
 - (ii) Describe materials commonly used as carbon source in media.
 - (iii) Describe continuous sterilization of media using high pressure steam.
 - (iv) What is a healthy inoculum ? Describe inoculum development programme in general.

3. Answer any **two** of the following : **14**
 - (i) Draw a labelled diagram of stirred tank bioreactor and give its basic functions.
 - (ii) Describe Air-lift fermenter.
 - (iii) Describe devices for aeration and agitation.
 - (iv) Describe strain improvement and market potential with reference to fermentation economics.

4. Answer any **two** of the following : **14**
- (i) Describe a batch fermentation process with its merits and demerits.
 - (ii) Describe solid substrate fermentations.
 - (iii) Describe mass transfer of oxygen in a fermentation process.
 - (iv) Explain aseptic operation of a fermentation process.
5. Answer the following in **one-two** lines only : **14**
- (i) What are primary metabolites ? Give two examples.
 - (ii) Give example of two recombinant products with their applications.
 - (iii) What is microbial biotransformation process ?
 - (iv) What are fixed pore and non-fixed pore filters ?
 - (v) Name the materials used for construction of body of the fermenter.
 - (vi) What is upstream and downstream processing ?
 - (vii) What is fed batch fermentation process ?
 - (viii) Give applications of biocatalytic reactors.
 - (ix) What is CSL ? Give its function in medium.
 - (x) What is strain degeneration ?
 - (xi) What is productivity of a process ?
 - (xii) How inoculum media differ from production media ?
 - (xiii) Name the dyes commonly used in media for primary screening of organic acid producers.
 - (xiv) Give applications of tower fermenter.
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