

Seat No. : \_\_\_\_\_

**NE-103**

**December-2015**

**B.Sc., Sem.-V**

**Core Course-304 : Microbiology**

**Time : 3 Hours]**

**[Max. Marks : 70**

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

1. Answer any **two** of the following : **(14)**
- (a) Describe changing phases of industrial microbiology in brief.
  - (b) Describe microbial metabolites and enzymes as range of fermentation processes.
  - (c) Enlist characteristics of industrially important organisms and describe primary screening of amylase producers.
  - (d) Describe important features of secondary screening programme in brief.
2. Answer any **two** of the following : **(14)**
- (a) What is an ideal fermentation medium ? How can it be formulated ?
  - (b) Explain the role of minerals, precursors and antifoam agents in fermentation media.
  - (c) Describe continuous sterilization of media, using high pressure steam.
  - (d) What is seed culture ? How can it be developed for an industrial process ?
3. Answer any **two** of the following : **(14)**
- (a) Enlist and explain essential features of a bioreactor.
  - (b) Describe devices used for control of pH, temperature and foam in a fermenter.
  - (c) Describe Air lift fermenter and Tower fermenter.
  - (d) Enlist criteria influencing success of a fermentation process. Explain “isolation of industrial organism” with reference to fermentation economics.

4. Answer any **two** of the following : **(14)**
- (a) Describe 'Fed batch' fermentation process with its merits and demerits.
  - (b) Explain importance of aseptic operation in a fermentation process.
  - (c) Describe mass transfer of oxygen and factors affecting it.
  - (d) Describe solid state fermentations and their applications.
5. Answer the following in one / two lines only. **(14)**
- (a) What is microbial transformation process ?
  - (b) What are recombinant products ? Give two examples.
  - (c) What are auxotrophs ? Give their application.
  - (d) What is primary screening ?
  - (e) What are defined media ? Give their importance.
  - (f) What are molasses ? Give their significance.
  - (g) Define Del factor.
  - (h) Name the organism used as index of sterilization.
  - (i) What are fixed pore and non fixed pore filters ?
  - (j) What are baffles ? Give their function.
  - (k) What are bio catalytic reactors ? Give their application.
  - (l) What is strain degeneration ?
  - (m) What are high value/ low volume products ?
  - (n) What is down time ?
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