

- Instructions:**
1. Students should write the answers from the question paper applicable to them; either "NEW COURSE" or "OLD COURSE" and it must be mentioned at the beginning of the answer paper.
  2. Answer any **three (3)** questions out of **eight (8)** questions.  
**Question No.9 is compulsory.**
  3. Draw figures wherever necessary.
  4. Figures to the right indicate marks.

- Q.1 A. Discuss the range of fermentation processes. (14)
- Q.2 A. Describe the chronological development of fermentation industry after 1964. (07)
- B. Highlight the component parts of a fermentation process. (07)
- Q.3 A. Discuss in details screening of industrially important microorganisms. (14)
- Q.4 A. Explain the over production of amino acids. (07)
- B. Describe the improvement of industrial organisms by modification of properties other than the yield. (07)
- Q.5 A. Give details of different carbon sources used as a fermentation media ingredient. (14)
- Q.6 A. Discuss filtration as a method for fermentation media sterilization. (07)
- B. Describe the development of inoculum for fungal and bacterial processes. (07)
- Q.7 A. Give details of aeration and agitation in a fermenter. (14)
- Q.8 A. Write a note on airlift fermenter. (07)
- B. Highlight the essential features of a bioreactor. (07)
- Q.9 Give short and specific answers in 1-2 lines only (any eight). (08)
- (1). Define the term fermentation.
  - (2). Give two examples of secondary metabolites.

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- (3). Give two examples of recombinant products.
- (4). Define auxotrophic mutants.
- (5). What is feedback inhibition?
- (6). Name any two antifoam agents.
- (7). Name two chemical mutagens.
- (8). Give two examples of precursors.
- (9). Which material is used for the body construction of a bioreactor?
- (10). What is the function of sparger in bioreactor?
- (11). What is dissolved oxygen?
- (12). What is del factor?
- (13). Name two methods of continuous sterilization.
- (14). Name the methods for preservation of microorganisms.
- (15). Name the organism used as index of sterilization.
- (16). Highlight any two characteristics of an industrially ideal organism.

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## 304 – Bioprocess Technology

### OLD SYLLABUS

Time: 2.00 h

Total Marks: 50

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  2. Answer any **three (3)** questions out of **eight (8)** questions.  
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  4. Figures to the right indicate marks.

- Q.1 A.** Describe in details the chronological development of fermentation industry. (14)
- Q.2 A.** Explain the primary screening of amylase and organic acid producers. (07)
- B.** Highlight the component parts of a fermentation process. (07)
- Q.3 A.** Give details of different nitrogen sources used as a fermentation media ingredient. (14)
- Q.4 A.** Discuss batch sterilization of fermentation media (07)
- B.** Describe the development of inoculum for bacterial and fungal processes (07)
- Q.5 A.** Give details of fermentation economics. (14)
- Q.6 A.** Highlight the essential features of a bioreactor. (07)
- B.** Write a note on tower bioreactor. (07)
- Q.7 A.** Describe in details the modes of operation of a fermenter. (14)
- Q.8 A.** Explain the mass transfer of oxygen in a fermenter (07)
- B.** Discuss the control of foam and temperature in a fermenter. (07)
- Q.9 Give short and specific answers in 1-2 lines only (any eight). (08)**
- (1). Define the term fermentation.
  - (2). Give two examples of primary metabolites.
  - (3). Give two examples of recombinant products.

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- (4). Define auxotrophic mutants.
  - (5). Name two types of feedback inhibition.
  - (6). Name any two antifoam agents.
  - (7). Name two biological mutagens.
  - (8). Give two examples of inhibitors.
  - (9). Which material is used for the body construction of a bioreactor?
  - (10). What is the function of agitator in bioreactor?
  - (11). What is dissolved oxygen?
  - (12). What is del factor?
  - (13). Name two methods of continuous sterilization.
  - (14). Name the methods for preservation of microorganisms.
  - (15). Name the organism used as index of sterilization.
  - (16). Highlight any two characteristics of an industrially ideal organism.
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