

MASTER OF PHARMACY (M. PHARM.) (CBCS-2019 COURSE)
M.Pharm. Sem-I Pharmaceutical Biotechnology : MARCH : 2022
SUBJECT: BIOPROCESS ENGINEERING & TECHNOLOGY

Day : Wednesday
Date 23-03-2022

M-20726-2022

Time : 10:00 AM-01:00 PM
Max. Marks: 75

N.B.:

- 1) **Q. No. 1 and Q. No.5** are **COMPULSORY**. Out of remaining questions answer **ANY TWO** from each section.
- 2) Answers to both sections should be written in **SEPARATE** answer books.
- 3) Figures to the right indicate **FULL** marks.

SECTION-I

- Q.1** What are the different techniques used to improve aeration in fermentation. **(08)**
- Q.2** Describe the principle, structure and applications of photo bioreactor. **(15)**
- Q.3** What do you mean by fermentation? Explain it's principle. Describe the flowchart of typical industrial production of fermentation product. **(15)**
- Q.4** Write notes on **ANY TWO** of the following: **(15)**
- a) Factors affecting viscosity of media
 - b) Ancillary parts of the fermenter
 - c) Application of computers in fermentation process

SECTION-II

- Q.5** Describe roles of various media components. **(07)**
- Q.6** What is enzyme immobilization? Explain different methods of enzyme immobilization. **(15)**
- Q.7** Explain batch and continuous mode of culture using graphical representation. **(15)**
- Q.8** Write notes on **ANY TWO** of the following: **(15)**
- a) Vitamin B12 production
 - b) Biotransformation
 - c) Streak plate method

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