Roll No..... Total No. of Section : 03

Total No. of Printed Pages : 03

Code No. : B/2080

Fourth Semester Examination, May 2017

M.Sc. BIOTECHNOLOGY

Paper - III

BIOPROCESS ENGINEERING AND TECHNIQUES

Time : 3 Hrs. **Max.Marks : 80**

Note : Section 'A', consists of 10 very short answer type questions, all of which are compulsory and should be attempted first. Section 'B' consists of four short answer type questions with internal options. Section 'C' consists of four long answer type questions with internal choice.

Section-'A'

Answer the following very short-answer-type questions in one or two sentences. **(2x10=20)**

Q-1. Define bioprocess operations.

Q-2. Name any two common technique employed for the isolation of industrially important microorganisms.

Q-3. What are the characteristic of a batch reactor?

Q-4. How the concentration of N2, NH3, ethanol and methanol can be measured simultaneously?

Q-5. Define Photobioreactor.

Q-6. What do you mean by immobilization of whole cell?

Q-7. What does DOC constitute for effluent treatment?

Q-8. What is meant by MEOR?

P.T.O.

Q-9. Give one example each of typical organism used for production of citric acid and Acetone.

Q-10. Write the composition of medium used for growth of Penicillium fungus for production of Penicillin.

Section-'B'

Answer the following short-answer-type questions with word limit 200-250. **(5x4=20)**

Q-1. Write a short note on medium development for industrial fermentation.

OR

Mention the requirement of air sterilization during bio processing and list the common methods for it.

Q-2. Analyze the role of mixed microbial population for fermentation process.

OR

How can we measure the bioprocess parameters during fermentation? Explain in Brief.

Q-3. Write a short note on treatment and disposal of effluents.

OR

Explain the role of immobilized whole cells in industrial applications.

Q-4. Give a protocol for industrial production of Glycerol.

OR

Describe the idea behind canning and packing of food products.

Section-'C'

Answer the following long-answer-type questions with word limit 400-450. **(10x4=40)**

Q-1. What is a Bioreactor? Classify it on the basis of mode of operation and draw a well labeled diagram showing general structure of a bioreactor.

OR

Describe kinetics of microbial fermentation in detail.

Q-2. Discuss the specialty of Pulsed bioreactor in detail.

OR

Give an account of control of fermentation process operated in fed batch mode.

Q-3. Explain the complete procedure of downstream processing using any example.

OR

Discuss the role of microbes in mineral beneficiation and oil recovery.

Q-4. What is food preservation? Discuss the idea of sterilization and pasteurization of food products.

OR

Describe the procedure of industrial production of Lysine in detail.

---x---