

# P. P. SAVANI UNIVERSITY

Fifth Semester of B.Sc. Examination

December-2021

SSMB 3150-Industrial Microbiology II

15.12.2021, Wednesday Time: 09:00 a.m. to 11:30 a.m. Maximum Marks: 60

## Instructions:

1. The question paper comprises of two sections.
2. Section I and II must be attempted in separate answer sheets.
3. Make suitable assumptions and draw neat figures wherever required.
4. Use of scientific calculator is allowed.

## Section-I (Total Marks - 30)

### Q.1 Short Questions [10]

#### 1.1 Objectives [05]

1.1a The destruction of microorganisms by steam may be described as

- A First order chemical reaction
- B Second order chemical reaction
- C Zero order chemical reaction
- D None of these

1.1b Sterilization may be carried out by

- A Heat
- B Radiation
- C Chemical agents
- D All of these

1.1c Highest temperature used for batch sterilization is

- A 100° c
- B 105° c
- C 121° C
- D 130° c

1.1d Which spores are used to check the efficiency of sterilization?

- A *Aspergillus niger*
- B *Bacillus stearothermophilus*
- C *Bacillus subtilis*
- D *Clostridium tetani*

1.1e The mechanism of air filtration in fibrous filter is

- A Electrostatic attraction
- B Impaction
- C Interception
- D All of these

1.1f What do you mean by idiophase?

- A Production of primary metabolite
- B Production of secondary metabolites
- C Production of waste materials
- D Production of cell biomass

1.1g Which of the following organism do not produce secondary metabolites?

- A Enterobacteria
- B Filamentous bacteria
- C Filamentous fungi
- D Spore forming bacteria

1.1h Which of the following factor is not involved in scale up process?

- A Sterilization
- B Inoculum development
- C Medium design
- D Temperature

1.1i A fed batch process is :

- A Closed system
- B Continuous system
- C Intermittently fed system
- D Biphasic system

1.1j Which growth phase is usually longer in continuous culture?

- A Log
- B Exponential
- C Stationary
- D Death

**1.2 Answer the Following: (MCQ/Short Question/Fill in the Blanks) [05]**

1.2a How the fermenter is sterilized?

1.2b How will you sterilized heat sensitive medium components?

1.2c Define mechanical filtration.

1.2d What is floatation?

1.2e What is aseptic technique?

**Q.2 Short Notes (Attempt any two) [06]**

A Explain the process of batch sterilization.

B Write a note on scale up.

C Describe in brief: Process of Mycellium Inoculum development.

**Q.3 Explain in detail (Attempt any two) [14]**

A Define sterilization. Explain continuous sterilization with advantages and disadvantages.

B Discuss development of inoculum for yeast process.

C Write a note on aseptic inoculation technique for fermentation process.



Section-II (Total Marks - 30)

Q.1 Short Questions

[10]

1.1 Objectives

[05]

1.1a HPLC stands for

- A High Pressure Liquid Chromatography
- B High Performance Liquid Chromatography
- C Both A and B
- D High Placed Liquid Chromatography

1.1b Paper Chromatography is a physical method that is used to separate \_\_\_\_\_

- A Simple mixtures
- B Complex mixtures
- C Viscous mixtures
- D Metals

1.1c Which type of filter paper are mostly used in paper chromatography?

- A Butter paper
- B Card board paper
- C Whatmann filter paper
- D Aluminum foil

1.1d What are different substrates used for ethanol production?

- A Starch containing substrate
- B Juices from sugarcane or molasses or sugar beet
- C Waste product from wood or processed wood
- D All of the above

1.1e Ethanol is produced by

- A continuous fermentation
- B batch fermentation
- C Both A and B
- D None

1.1f Which of the following is used for aeration in a fermentor?

- A Impeller
- B Baffles
- C Sparger
- D All of these

1.1g Which of the following in the medium inhibits the synthesis of amylase?

- A Glucose
- B Lactose
- C Galactose
- D Maltose

1.1h The bioreactor is not capable of \_\_\_\_\_

- A Producing aseptic conditions
- B Meeting containment regulations
- C Controlling pH
- D Produce electricity

1.1i Amylase is used in industries like

- A Food industry
- B Pharmaceuticals
- C Paper industry
- D All

1.1j In chromatography, which of the following can the mobile phase be made of?

- A Solid or liquid
- B Liquid or gas
- C Gas only
- D Liquid only

1.2 Answer the Following:

[05]

1.2a What is Flocculation?

1.2b What are the various classes of products obtained?

1.2c What is Centrifugation?

1.2d What are various types of Chromatography?

1.2e What are advantages of Thin Layer Chromatography?

Q.2 Short Notes (Attempt any two)

[06]

A Various types of filters

B Various cell disruption techniques

C Paper chromatography

Q.3 Explain in detail (Attempt any two)

[14]

A Single cell protein

B Amylase

C Ethanol Production