

# P. P. SAVANI UNIVERSITY

Fifth Semester of B.Sc. Examination  
December-2021

SSBT3190-Microbial Biotechnology-I

14.12.2021, Tuesday

Time: 12:30 p.m. to 03:00 p.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 Vinegar is produced by

- A *Acetobacter*
- B *Propionobacter*
- C *Enterobacter*
- D *Bacillus*

1.1b *Bacillus thuringiensis* is used as

- A Biofertilizer
- B Biopesticide
- C Chemical fertilizer
- D Nutrient manipulator

1.1c Which of the following is used for cheese processing?

- A *Penicillium notatum*
- B *Aspergillus niger*
- C *Penicillium roquefortii*
- D *Cleviceps purpurea*

1.1d Agar-Agar is obtained commercially from species of

- A *Gelidium*
- B *Gracilaria*
- C *Condrus*
- D All of the above

1.1e Alginate is obtained from

- A Bacteria
- B Fungi
- C Protozoa
- D Algae

1.1f In pure cultures colonies look

- A Identical
- B Different
- C Cannot be said
- D More or less similar

**1.1g** Stabs are used for growing

- A Anaerobic bacteria
- B Aerobic bacteria
- C Both
- D None

**1.1h** A single cell can be isolated using

- A Streak method
- B Spread method
- C Swab method
- D Micromanipulator

**1.1i** Complete killing of microorganisms is known as

- A Antisepsis
- B Disinfection
- C Sterilization
- D Sanitization

**1.1j** Which of the following is observed for screening of enzyme producing bacteria?

- A Zone of inhibition
- B Zone of dissolution
- C Zone of discolouration
- D Zone of clearance

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

**1.2a** Define "Disinfection".

**1.2b** Penicillin inhibits bacterial \_\_\_\_\_ synthesis.

**1.2c** Amino acids are produced in \_\_\_\_\_ phase of bacterial growth.

**1.2d** Autoclave works on the principle of steam under pressure. (True/False)

**1.2e** Which technique is used to sterilize heat sensitive material?

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

- A Differentiate between pure culture and mixed culture.
- B Significance of serial dilution during isolation of microorganisms.
- C Importance of stationary phase in industrially important bacteria.

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

- A Pure culture technique.
- B Screening of industrially important microorganisms.
- C Industrial application of fungi.



**Section-II (Total Marks - 30)**

**Q.1 Short Questions**

**[10]**

**1.1 Objectives**

**[05]**

**1.1a** Gradient plate technique can be used to obtain

- A Pigment less mutants
- B Antibiotic resistant mutants
- C Wild type bacteria
- D Auxotrophic bacteria

**1.1b** Which of the following organism can be improved by parasexual cycle

- A Bacillus subtilis
- B Streptomyces coelicolor
- C Aspergillus niger
- D Corynebacterium diphtheriae

**1.1c** A cell without a cell wall is known as

- A Ghost cell
- B Protoplast
- C Cytoplasm
- D Zymoplast

**1.1d** Lyophilization is also known as

- A Freeze drying
- B Air drying
- C Deep frying
- D Desiccation

**1.1e** Direct uptake of DNA from surrounding is known as

- A Conjugation
- B Transduction
- C Transformation
- D Biolistic

**1.1f** Which of the following is NOT a cryoprotective agent

- A Glycerol
- B DMSO
- C Ethylene glycol
- D Mineral oil

**1.1g** Which of the following methods involves sublimation of water present in cells in order to preserve them

- A Cryopreservation
- B Desiccation
- C Refrigeration

**D Lyophilization**

**1.1h** BT cotton has been obtained using

- A Somaclonal variations
- B Hybridization
- C Protoplast fusion
- D rDNA technology

**1.1i** Which of the following techniques can be used to induce site specific mutation

- A Ethidium Bromide
- B U.V rays
- C transposons
- D PCR

**1.1j** Which of the following mutation has most drastic effect on an organism

- A Point mutation
- B Silent mutation
- C Missense mutation
- D Frameshift mutation

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

**1.2a** What is parasexual cycle?

**1.2b** What is meant by cryopreservation?

**1.2c** The first licensed drug produced using rDNA technology was \_\_\_\_\_.

**1.2d** Most widely used technique for long term preservation of microorganisms is \_\_\_\_\_.

**1.2e** Spore forming fungal cultures can be preserved by \_\_\_\_\_.

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

- A Types of mutation
- B Protoplast fusion
- C Preservation of fungal cultures

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

- A Preservation of microorganisms using low temperature.
- B Genetic methods of strain improvement
- C Methods of preservation of microorganisms based on dehydration.