

SEAT No. _____

SARDAR PATEL UNIVERSITY
BACHELOR OF SCIENCE (B.SC.)

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[51]

B.SC 3RD SEMESTER EXAMINATION 2022

TUESDAY, 14th June 2022

12:00 TO 0200 pm

SUBJECT: BIOTECHNOLOGY

COURSE: US03CBIT02

(Applications of Biotechnology-I)

DURATION 2 HRS.

TOTAL MARKS: 70

Figures to the right indicate marks:

Q1. Multiple Choice questions: All questions are compulsory. (1 x 10 = 10)

i) The Plants generated from Endosperm will be:

- A) Diploid B) Triploid C) Tetraploid D) haploid

ii. Thermo labile compounds can be sterilized by?

- A) Autoclave B) Hot air oven C) Microfiltration D) Surface sterilization

iii) Cell types, which can differentiate into multiple types of progeny cells are known as:

- A) Macrophages B) Stem cells C) Chondrocytes D) Adipocytes

iv) Which of the following monolayer culture systems have the highest surface area: medium ratio?

- A) Roux bottle B) Spiral cell roller bottle C) Hollow fibres D) Plastic bag

v) The Hybridoma technology for production of monoclonals (Mabs) was discovered by:

- A) Kary Mullis B) Moore C) Kohlar & Milestein D) Littlefield & Moore

vi) Which is the best potential future application of stem cell technology?

- A) Treatment of malaria B) Treatment of Genetic disorders
C) Treatment of leprosy D) Treatment of typhoid

vii) The capacity of a single cell to give rise to entire individual is called:

- A) Superability B) Multipotency C) Totipotency D) Pleuripotency

viii) In root nodules of legumes, anaerobic conditions are maintained by:

- A) Nitrogenase B) Leghemoglobin C) leaves of legumes D) Oxygenase

ix) Potential algal source of single cell protein is:

- A) Saccharomyces B) Torula C) Spirulina D) Mycorrhiza

x) Which of these is popularly known as "Delight of the Diabetic"?

- A) Mushrooms B) Egg C) Spirulina D) Marchantia

Q2. Fill in the blanks: Each question in this part is compulsory and carries 1 mark each.

(08 Marks)

- _____ is an example of pluripotent cell.
- Virus free plants can be obtained through _____.
- "Plants obtained from pollen Culture are diploid". (True/ False).
- Hormone pairs required for callus to differentiate, includes auxin & _____.
- When Electric current is used for transformation, it is called _____.
- "Monoclonal antibodies have identical antigen specificity" (True/ False).
- Lineage of specific cell type is known as _____.
- "ES cell can give rise to entire individual" (True/ False).

P.T.O

Q3. Short Answer type questions (Attempt any TEN)

(10 x 2 = 20 marks)

- i) Define and explain the term nurse culture.
- ii) Define the terms totipotency and Pluripotency
- iii) Enlist the factors that influences the effectiveness of sterilization.
- iv) What is the significance of micropropagation.
- v) Define biopesticides. Why their usage must be promoted?
- vi) Enumerate the sources of single cell protein with an example.
- vii) Give the nutritive and medicinal values of mushroom.
- viii) Define Explant and transgenics.
- ix) Mention various methods to avoid contamination in tissue culture.
- x) Mention advantages of transgenic technology to human life.
- xi) What is genetically modified organism (GMO) ? Give one example.
- xii) What are Single cell protein? What is their importance?

Q4. Long answer type Questions: Attempt any four.

Each question carry eight marks. (4Q x 8M = 32 Marks)

1. Describe various methods used for sterilization in Plant tissue culture.
2. Briefly explain callus culture. Mention various advantages and limitations of Plant tissue culture.
3. Write an elaborative note on Laboratory setup and types of media requirements for animal cell culture.
4. Write notes on:
 - A. Applications of Stem cells. (04)
 - B. Differences between continuous and finite cell lines. (04)
5. Explain any one physical and vector based method of transfection with relevant diagram.
6. Write an elaborative note on transgenic organisms, examples, applications & limitations.
7. Explain mushroom cultivation in detail with relevant example and process flowchart.
8. Write Short notes on:
 - A. Algal Bio fertilizers with example and significance (04)
 - B. Single cell proteins: Applications and limitations. (04)
