

# P. P. SAVANI UNIVERSITY

First Semester of B.Sc. Examination

February-2022

SSBT1020-Introduction to Biotechnology-II

08.02.2022, Tuesday Time: 12:00 p.m. to 02:30 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 Which among the followings insects are affected by CRY protein?
- A Lepidopteron
  - B Dipterans
  - C Coleopteran
  - D All of the above
- 1.1b Which flowers gene was used in "Golden rice"?
- A Tulip
  - B Sunflower
  - C Daffodil
  - D Marigold
- 1.1c The Golden rice is having good amount of
- A Biotin
  - B Vitamin K
  - C Vitamin C
  - D B-Carotene & Ferritin
- 1.1d Which among the following GM crop is obtained by antisense RNA technology?
- A Golden rice
  - B Flavr Savr variety of tomato
  - C Bt cotton
  - D Bt brinjal
- 1.1e Which among the following genes are associated with the tomato?
- A pTOM5
  - B pTOM6
  - C Both A and B
  - D Neither A nor B
- 1.1f Where can scientists obtain stem cells?

- A From the brain
- B From an embryo
- C From tissues in the body
- D From an embryo or tissue in body

1.1g A transgenic animal which used for obtaining lactoferrin rich milk?

- A Rosie (Cow)
- B Dolly (Sheep)
- C Herman (bull)
- D All of them

1.1h The controversy about the use of Bt corn is:

- A Is a potential allergen to humans
- B Is potentially harmful to monarch butterflies
- C Both (A) and (B)
- D Can contaminate groundwater

1.1i Which of the following is not a characteristics of a transgenic crop?

- A Increased methionine content
- B Insect resistant toxin
- C Herbicide resistance
- D none

1.1j Production of transgenic animals require transfections of

- A Stem cells
- B Eggs or embryos
- C Red blood cells
- D White blood cells

1.2 Answer the Following: (MCQ/Short Question/Fill in the Blanks)

[05]

1.2a The Alzheimer's mouse was introduced with ..... precursors.

1.2b Dolly, the first mammalian clone was born in year.....

1.2c Define enviro pig.

1.2d Write two roles of transgenic chickens

1.2e What is pluripotency?

Q.2 Short Notes (Attempt any two)

[06]

A Stem cells

B What are transgenic fish? Name at least four transgenic fishes.

C Write a brief note on transgenic animal "Herman".

Q.3 Explain in detail (Attempt any two)

[14]

A Applications/advantages of transgenic animals in livestock improvements.

B Write in detail about transgenic mouse.

C What are "flavr savr variety" of tomato? Write the steps involved in obtaining the GM tomato with the help of a labeled diagram.



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

**Q.1 Short Questions**

[10]

**1.1 Objectives**

[05]

1.1a' Which among the following product is not obtained from microbes?

- A Ethanol
- B Antibiotic
- C Single cell protein
- D Paracetamol

1.1b Which type of microorganism an *Aspergillus niger* is?

- A Fungi
- B Bacteria
- C Actinomycetes
- D Virus.

1.1c Heat labile components are sterilized by-

- A Dry heat
- B Moist heat
- C Filtration
- D Radiation

1.1d When was DBT established in India?

- A 1<sup>st</sup> January 2014
- B 1<sup>st</sup> January 2013
- C 1<sup>st</sup> June 2013
- D 1<sup>st</sup> June 2012

1.1e NCCS, a DBT funded institute is located in which city of India?

- A Hyderabad
- B New Delhi
- C Pune
- D Imphal

1.1f What is the full name of ABLE?

- A Association of Biotechnology Led Enterprises
- B Association of Biology Led Enterprises
- C Assistant of Biotechnology Led Enterprises
- D Association of Bioinformatics Led Enterprises

1.1g What is the full name of BIRAC

- A Biotechnology Industry Research Associated Council
- B Biotechnology Industry Research Assistance Council
- C Bioinformatics Industry Research Assistance Council (BIRAC)
- D Biotechnology Industry Report Assistance Council (BIRAC)

- 1.1h Most of the antibiotics is derived from which type of microorganism?  
A Fungi  
B Algae  
C Bacteria  
D Actinomycetes
- 1.1i BICCOL, a DBT autonomous institute is involved in manufacturing of which product mainly?  
A Mycotoxins  
B Enzymes  
C Vaccines (Oral polio)  
D Microbial strain
- 1.1j Which among the following is not a DBT autonomous institute?  
A IMTECH, Chandigarh  
B Centre for DNA fingerprinting and diagnostics, Hyderabad  
C NIPGR, New Delhi  
D THSTI, Faridabad
- 1.2 Answer the Following: (MCQ/Short Question/Fill in the Blanks) [05]
- 1.2a Name two microorganisms used for the production of single cell protein.
- 1.2b Define: industrial microbiology
- 1.2c Write two examples of primary metabolite
- 1.2d Full name of: ATCC
- 1.2e Which organism is used to produce citric acid?
- Q.2 Short Notes (Attempt any two) [06]
- A Enlist all the major institutions of DBT in India.
- B Write major differences between primary and secondary metabolites. Give examples.
- C Write at least six private biotechnology firms in India.
- Q.3 Explain in detail (Attempt any two) [14]
- A Write the full form of ABLE. Write a detailed note on ABLE.
- B Write role of *Saccharomyces cerevisiae* in the microbial industries. Enlist all the products manufactured from *Saccharomyces cerevisiae*.
- C Define and expand the term BIRAC. In which year it was established? What is the vision and strategies of BIRAC?