

SEAT No. _____

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SARDAR PATEL UNIVERSITY
5th Semester Examination--TYBSc-Biotechnology
Course US05CBIT22; Paper--Transgenics
Date-26/12/2020; Saturday

Time 2.00pm-4.00pm

Total Marks-70

Q1. Multiple choice questions. Attempt all questions. [10]

i. Resistance to glufosinate in transgenics has been developed by the transfer of--

- A. gene for ALS
- B. gene for EPSPS
- C. gene for GS
- D. gene for PAT

ii. In Golden Rice the production of β -carotene was done by transfer of

- A. Crt 1 from *Petunia* and Psy from *Narcissus*
- B. Psy from *Petunia* and and Crt-1 from *Narcissus*
- C. Psy from *Narcissus* and Crt-1 from *Erwinia*
- D. Psy and Crt-1 both from *Erwinia*

iii. Though the Ti plasmid has revolutionized plant genetic engineering, one limitation of its use is that it-----

- A. cannot transmit prokaryotic genes
- B. does not infect broad leaf plants
- C. does not infect cereal plants such as corn and rice.
- D. cannot be used on fruit bearing plants

vi. Temperature of liquid nitrogen is-----

- A. -70°C
- B. -150°C
- C. -196°C
- D. -10°C

v. The set of DNAs generated by using random PCR is called

- A. RFLP
- B. RAPD
- C. AFLP
- D. in situ hybridization

vi. DNA of eukaryotes has several repeating units of short sequences called

- A. Tandem repeats
- B. Random repeats
- C. Mini satellites
- D. All of these

vii. Monoclonal antibodies are

- A. Heterogenous antibodies produced from single clone of plasma cells
- B. Homogenous antibodies produced from single clone of plasma cells
- C. Both A and B
- D. None of these

viii. HGPRT- mutant cells are raised by inducing mutations using

- A. 5-bromouracil
- B. 8-azaguanine
- C. colchicine
- D. 6-methyl isocyanate

ix. Which of the following is a scorable marker?

- A. gus
- B. gfp
- C. luc
- D. all of them

x. Name the drug which is used to isolate hybridoma cells from the media?

- A. Amphetamine
- B. Opium
- C. Aminopterin
- D. Cocaine

[1]

- Q2. Short questions. Attempt any TEN questions. [20]**
- Enlist various methods of gene transfer in plants.
 - Explain about the gene required to make Bt cotton.
 - Enlist scorable markers and selectable markers.
 - How liposome is used for gene transfer
 - How glufosinate can kill plant?
 - Give the full form of CAT & GUS with their uses?
 - Define microsatellite and minisatellite.
 - What is the role of DMSO in cryopreservation.
 - Define knockout mice.
 - Define edible vaccine and enlist its benefits.
 - What do you mean by dolly sheep?
 - Define functional genomics.
- Q3. Fill in the blanks. True/false. [08]**
- Bar gene product can inhibit the enzyme-----.
 - Intact plant cell can be used to transfer gene via electroporation. (True/false).
 - GUS is a selectable marker (True/false).
 - FlavrSavr tomato was made by using antisense mRNA of -----
Antibodies produced by transgenic plant is called-----
 - Hybrid cell survive in HAT medium as it inherits HGPRT from B cells(True/False).
 - In hybridoma technology, hybrid cells are selected in- -----medium.
 - Helper plasmid contain - -----genes only.
- Q4. Long questions of 8 marks each. Attempt any FOUR questions. [32]**
- Discuss electroporation and microinjection methods of gene transfer. [08]
 - Describe the structure of Ti plasmid with enlisting all of its genes and their role. [08]
 - A linear DNA is cut by two enzymes separately and combined [08]

Hind -III----2.8kb 1.2kb
 Bam HI---1.8kb 1.3kb 0.9kb
 Bam HI +Hind III----0.3kb 0.9kb 1.0kb 1.8kb
 Draw a restriction map with pattern on gel for this.[4]
 - Write a short note on ESTs.[4]
 - Define molecular markers. Explain AFLP in detail. [08]
 - How would you prepare a transgenic tomato with long shelf life? [08]
 - Describe the steps involved in cryopreservation. [08]
 - How monoclonal antibodies are produced? [08]
 - What is hybridoma cell lines, how they are prepared? [08]

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