



# BRAINWARE UNIVERSITY

Term End Examination 2023

Programme – B.Sc.(BT)-Hons-2018/B.Sc.(BT)-Hons-2020

Course Name – Recombinant DNA Technology

Course Code - BBT502/BBTC502

( Semester V )

Full Marks : 4

Time : 2:30 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

### Group-A

(Multiple Choice Type Question)

1 x 15=15

1. Choose the correct alternative from the following :

- (i) \_\_\_\_\_ mutations has been resolved by the use of High fidelity polymerase
- |             |                  |
|-------------|------------------|
| a) Internal | b) Site-directed |
| c) Point    | d) Extraneous    |
- (ii) Gene transfer with the help of pollen grains can be termed as:
- |                          |                         |
|--------------------------|-------------------------|
| a) Pollen Transformation | b) Pollen transgenic    |
| c) Pollen recombination  | d) Pollen hybridization |
- (iii) In oligonucleotide directed mutagenesis \_\_\_\_\_ phage is used
- |            |            |
|------------|------------|
| a) Cosmid  | b) Phagmid |
| c) Plasmid | d) M13     |
- (iv) Homologous recombination in germ cells occurs in which phase?
- |              |              |
|--------------|--------------|
| a) Pachytene | b) Leptotene |
| c) Zygotene  | d) Diplotene |
- (v) \_\_\_\_\_ minimizes or eliminates the need of tissue culture.
- |                |          |
|----------------|----------|
| a) Leaf        | b) Seed  |
| c) Whole plant | d) Trunk |
- (vi) Which indirect technique is used to insert genes in dicot plants?
- |                        |                             |
|------------------------|-----------------------------|
| a) Ti plasmid mediated | b) Microinjection           |
| c) Electroporation     | d) Particle acceleraeration |
- (vii) What is the use of left segment of octopine T-DNA (TL)
- |                           |                    |
|---------------------------|--------------------|
| a) Opine synthesis        | b) Tumor formation |
| c) Virulence in bacterium | d) None of these   |
- (viii) Virulence trait of *Agrobacterium tumefaciens* is govern by
- |  |                                |
|--|--------------------------------|
| a) Chromosomal DNA                               | b) Tumour inducing plasmid DNA |
| c) Chromosomal DNA & Tumour inducing plasmid DNA | d) Cryptic plasmid DNA         |
- (ix) Gene product of Lac Z is

- a) Beta galactosidase  
 b) Alpha galactosidase  
 c) Gamma galactosidase  
 d) Delta galactosidase
- (x) What are the chances of having a particular four nucleotide long motif, if all the nucleotides are present with equal frequencies and at random?  
 a) 1 out of 256  
 b) 1 out of 64  
 c) 1 out of 16  
 d) 1 out of 8
- (xi) Name the selectable markers for pUC8  
 a) Lacz only  
 b) Lacz and TetR  
 c) Lacz and KanR  
 d) Lacz and AmpR
- (xii) What are mosses?  
 a) Haploid  
 b) Diploid  
 c) Triploid  
 d) Tetraploid
- (xiii) Which one of the following molecular incidence is used for gene targeting  
 a) Replication  
 b) Homologous recombination  
 c) Non homologous end joining  
 d) Reverse transcription
- (xiv) Which of the following vector type is Lambda Zap11?  
 a) Replacement vector  
 b) Cloning vector  
 c) Insertion vector  
 d) Expression vector
- (xv) Example of FISH is:  
 a) Chromosome painting  
 b) Chromosome deletion  
 c) Chromosome colouration  
 d) Chromosome annealing

### Group-B

(Short Answer Type Questions)

3 x 5=15

2. How mutants are selected? (3)  
 3. Define electroporation. (3)  
 4. Explain the role of Vir genes in agrobacterium mediated gene transfer. (3)  
 5. Describe the applications of DNA fingerprinting (3)
- OR**
- Indicate the nomenclature pattern of Restriction enzyme (3)  
 6. Explain the Restriction enzyme modification system and its need. (3)
- OR**
- Infer about the tools used in gene cloning? (3)

### Group-C

(Long Answer Type Questions)

5 x 6=30

7. What are vectors? what are the different types of vectors? (5)  
 8. Explain gene recombination. (5)  
 9. How to produce a transgenic mice? What are its application (5)  
 10. What are restriction enzymes? What are the different types of restriction enzymes? (5)  
 11. Write down the role of Vir proteins in Plant transformation. (5)
- OR**
- What are the basic principle of RT PCR? (5)  
 12. How does recombinant protein expression occur using an expression vector? (5)
- OR**
- Describe the process of transformation in monocots using Agrobacterium tumefaciens. (5)

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