



BRAINWARE UNIVERSITY

Term End Examination 2022

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

Course Name – Recombinant DNA Technology

Course Code - BBT502/BBTC502

(Semester V)

Full Marks : 60

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) Inactivation of any gene by gene targeting is called
 - a) Knocked in gene
 - b) Knocked down gene
 - c) Knocked out gene
 - d) All of them
- (ii) DNA microinjection into the egg is used to produce which of the following transgenic animals?
 - a) Pig
 - b) Mice
 - c) Chicken
 - d) All
- (iii) What is superovulation?
 - a) Decreased ovulatory response by internal hormonal therapy
 - b) Increased ovulatory response by external hormonal therapy
 - c) Decreased ovulatory response by external hormonal therapy
 - d) Increased ovulatory response by internal hormonal therapy
- (iv) The chemical techniques to synthesize polynucleotides was developed by ?
 - a) Khorana
 - b) Crick
 - c) Watson
 - d) Mc.Clintok
- (v) Which of the following enzymes in bacteria is responsible for restricting the growth of viruses?
 - a) Restriction endonuclease
 - b) Gyrase
 - c) Lipase
 - d) Exonuclease
- (vi) Recombinant plasmids are added to a bacterial culture pre-treated with _____ ions
 - a) Ferrous
 - b) Iodine
 - c) Magnesium
 - d) Calcium
- (vii) Who invented Polymerase chain reaction (PCR)
 - a) Watson
 - b) Mullis
 - c) Crick
 - d) Franklin
- (viii) Taq polymerase is known as----- polymerase.
 - a) Heat stable
 - b) Heat labile
 - c) Buffering
 - d) Large

- (ix) Molecular beacons are short stretch of
- a) Polynucleotides b) Oligonucleotides
c) Monosaccharide d) Polysaccharide
- (x) DNA sequence of size larger than 250 kb can be cloned in
- a) YAC b) BAC
c) HAC d) Both YAC and BAC
- (xi) Maximum size of foreign DNA to be inserted into a replacement vector is
- a) 18-20 kb b) 20-25 kb
c) 25-30 kb d) 30-35 kb
- (xii) What is stuffer?
- a) The right arm of the vector DNA b) The left arm of the vector DNA
c) Central fragment of the lambda vector DNA d) None
- (xiii) The restriction endonuclease is having a defence mechanism in the bacterial system against foreign DNA such as viruses. But how bacterial DNA get protection?
- a) By methylation of bacterial DNA by restriction enzyme b) By methylation of foreign DNA by restriction enzyme
c) By phosphorylation of bacterial DNA by restriction enzyme d) By phosphorylation of foreign DNA by restriction enzyme
- (xiv) Polyadenylation of RNA species is an important criterion for the production of cDNA species. Which of the following is true?
- a) Eukaryotic mRNAs are mostly non-polyadenylated b) Bacterial mRNAs and organelle mRNAs are polyadenylated
c) Polyadenylation should be at 3' end d) It is carried out by the addition of T residues after synthesis
- (xv) _____ is the first transgenic plant
- a) Rice b) Tobacco
c) Cotton d) Datura

Group-B

(Short Answer Type Questions)

3 x 5=15

2. Illustrate the steps of primer designing. (3)
3. How can we distinguish between Genomic library and cDNA library. (3)
4. Describe the applications of genetic engineering? (3)
5. Explain the concept on Microinjection. (3)

OR

- Explain the Restriction enzyme modification system and its need. (3)
6. Infer about the tools used in gene cloning? (3)

OR

- Justify the affects of mutants on normal biological system. (3)

Group-C

(Long Answer Type Questions)

5 x 6=30

7. State the difference between PCR and qPCR. What are the advantages of qPCR? (5)
8. What is the purpose of restriction modification system? How it is done? (5)
9. Write a note on genetically engineered human hormone. (5)
10. Write in brief, the mechanism of direct gene transfer into organisms. (5)
11. Explain the process of chimeric protein production. (5)

OR

- Write a short note on site-directed mutagenesis with proper diagram. (5)
12. What are vectors? what are the different types of vectors? (5)

OR

- How to determine a child's identity through molecular markers? (5)
