



Avinashilingam Institute for Home Science and Higher Education for Women
(Deemed to be University under Category 'A' by MHRD, Estd. u/s 3 of UGC Act 1956)
Re-accredited with 'A+' Grade by NAAC. Recognised by UGC Under Section 12B
Coimbatore - 641 043, Tamil Nadu, India

Bachelor's Degree Examination – June 2021
VI Semester

Class : III UG
Major : BOTANY

Time : 3 Hours
Max. Marks: 100

18BBOC24 Plant Genetic Engineering

- CO1:** gain knowledge on genetic engineering
CO2: able to gain knowledge on DNA sequences and their analysis
CO3: able to update the knowledge on the use of various technique used in genetic engineering
CO4: understands the concept of DNA finger printing technology and their applications
CO5: students gain knowledge on gene transfer technology
CO6: able to gain knowledge on monoclonal antibodies

Part A
Choose the Correct Answer

10 x 1 = 10

1. Probe is a CO1 K1
 - a. Protein for detecting a specific DNA molecule
 - b. Short piece of labelled DNA which are complementary to the nucleic acid strand to be detected
 - c. Short piece of labelled DNA (or) RNA which are complementary to the nucleic acid strand to be detected
 - d. None of the above
2. The technique used to identify specific DNA sequence in bacterial colonies is CO2 K1
 - a. colony hybridization
 - b. In situ hybridization
 - c. dot blot technique
 - d. Western blotting
3. The IS element can be identified by the presence of CO3 K1
 - a. Antibiotic resistance gene
 - b. Endonuclease cleavage site
 - c. 50bp inverted repeat
 - d. Integrase site
4. The enzyme the catalyses the transposition of an IS element is called CO3 K1
 - a. Transposase
 - b. Integrase
 - c. Transcriptase
 - d. Polymerase
5. Which of the following technique is used in DNA finger printing? CO4 K2
 - a. Western blotting
 - b. Southern blotting
 - c. Northern blotting
 - d. Eastern blotting
6. Micro satellites are CO4 K3
 - a. frequently found in bacterial genome
 - b. Used as DNA markers
 - c. genome –wide repeats
 - d. Retro elements
7. Restriction enzymes were discovered by CO4 K1
 - a. Smith and Nathans
 - b. Alexander Fleming
 - c. Berg
 - d. None of the above
8. Which one of the following is the physical method of gene transfer in plants? CO5 K1
 - a. *Agrobacterium*-mediated gene transfer
 - b. Viral – mediated gene transfer
 - c. Particle gun bombardment
 - d. None of the above
9. SDS – PAGE is used to CO5 K2
 - a. separate proteins
 - b. Separate lipids
 - c. separate DNA
 - d. Separate amino acids

10. Agarose gel is used to separate
a. Proteins
c. DNAs and RNAs
b. Carbohydrates
d. Enzymes
- CO5 K3

Part B

5 x 6 = 30

Answer ALL questions

Each answer should not exceed 400 words or two pages

- 11.a. Explain colony hybridization technique. (or)
11.b. Write brief account on Probes. CO1 K2
CO1 K3
- 12.a. Differentiate composite and complex transposons. (or)
12.b. Explain the mechanism of transposition. CO2 K2
CO3 K4
- 13.a. Differentiate single and multilocus Probes. (or)
13.b. Write about Polymerase Chain Reaction. CO3 K2
CO3 K3
- 14.a. Give a short note on Cosmid vectors (or)
14.b. Explain shot gun method. CO4 K2
CO5 K2
- 15.a. Describe Electrophoresis and its types. (or)
15.b. Write the protocol of Agarose Gel Electrophoresis. CO6 K2
CO6 K3

Part C

5 x 12 = 60

Answer ALL questions

Each answer should not exceed 800 words or four pages

- 16.a. Elaborate the Sanger's dideoxy nucleotide method of DNA sequencing. (or)
16.b. Discuss about cDNA library and its significance. CO2 K2
CO3 K2
- 17.a. Give an account of bacterial transposable elements. (or)
17.b. Comment on Maize transposable elements and their significance. CO3 K3
CO3 K3
- 18.a. Write about DNA fingerprinting technique (or)
18.b. List out the applications of DNA fingerprinting technique. CO4 K2
CO4 K3
- 19.a. With suitable diagram, explain *Agrobacterium* mediated gene transfer. (or)
19.b. Explain Southern blot technique and its significance. CO5 K4
CO5 K3
- 20.a. Enumerate in detail SDS – PAGE. (or)
20.b. Give the applications of electrophoresis. CO6 K4
CO6 K3
