

2021

Time : 3 hours

Full Marks : 60

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Answer any four questions in which

Q. No. 1 is compulsory.

1. Choose the correct answer from the given alternatives : 15

(a) Plant Biotechnology involves _____

- (i) Production of valuable products in plant
- (ii) Rapid clonal multiplication of desired genotypes
- (iii) Production of virus free plants
- (iv) All of these

(b) The most common solidifying agent used in tissue culture is _____

- (i) Agar
- (ii) Dextran
- (iii) Mannan
- (iv) All of these

(c) Which of the following best suited method for virus free plants ?

- (i) Embryo culture
- (ii) Meristem culture
- (iii) Ovule culture
- (iv) Anther culture

(d) In pBR 322, pBR stands for :

- (i) Plasmid bacterial recombination
- (ii) Plasmid bacterial replication
- (iii) Plasmid Boliver and Rodriguez
- (iv) Plasmid Baltimore and Rodriguez

e) Ti plasmids that is used as a plant vector is obtained from

- (i) *Agrobacterium tumefaciens*

- (ii) *Agrobacterium rhizogenes*
 - (iii) *Agrobacterium radiobacter*
 - (iv) *Thermus aquaticus*
- (f) Which of the following technique is suitable for identifying m RNA molecule in a sample ?
- (i) Western blotting
 - (ii) Southern blotting
 - (iii) Northern blotting
 - (iv) Dot blotting
- (g) Which of the following DNA technology is used for the amplification of DNA in vitro ?
- (i) Polymerase Chain Reaction
 - (ii) Restriction Analysis
 - (iii) Northern blot
 - (iv) Southern blot
- (h) The technique of obtaining large number of plantlet by tissue culture method is called :
- (i) Plantlet culture

- (ii) Micropropagation
 - (iii) Organ culture
 - (iv) None of these
- (i) Denaturation is the process of _____.
- (i) Heating between 72°C to 82°C
 - (ii) Heating between 40°C to 60°C
 - (iii) Heating between 90°C to 98°C
 - (iv) None of these
- (j) The pair of hormones required for a callus to differentiate are _____.
- (i) Ethylene and Auxin
 - (ii) Auxin and Cytokinin
 - (iii) Auxin and Abscisic acid
 - (iv) Cytokinin and Gibberellin
- (k) Which of the following statements are true regarding rDNA technology ?
- (i) rDNA technology is used to obtain large number of copies of specific DNA fragment

(ii) rDNA technology is used to obtain large quantities of the protein produced by the concerned gene

(iii) rDNA technology is used to integrate gene of interest into chromosomes where it expresses itself

(iv) All of these

(l) Totipotency refers to _____

(i) Development of fruits from flowers in a culture

✓(ii) Development of an organ a cell in a culture medium

(iii) Flowering in a culture medium

(iv) All of these

(m) Restriction enzymes are also called as

② _____

(i) Biological scissors

✓(ii) Molecular Scalpels

(iii) Molecular knives

(iv) All of these

(n) The polymer chain reaction is used for ③

✓(i) Amplifying gene of interest

✓(ii) Constructing RAPD maps

(iii) Detecting the presence of the transgene in an organism

(iv) All of these

2. What are various steps of micropropagation ?
Illustrate the applications. 15

3. Give a detail account on any one of prokaryotic vector. 15

4. Describe the steps involved in construction of c library. 15

✓5. Give a detail account on Ti Plasmid. 15

6. Describe the steps involved in Southern blotting techniques and their uses. 15

✓. Write the benefits and risk of Genetically Modified Foods. 15

8. Write short notes on any **three** of the following :

15

- ✓(a) RT-PCR (Reverse Transcriptase Polymerase Chain Reaction)
- ✓(b) Insect resistance-Bt Crops
- (c) Biopiracy
- (d) Taq polymerase
- ✓(e) Autoradiography



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