

# National Testing Agency

**Question Paper Name:** Molecular Biology Genetic Engineering and Plant Tissue Culture  
**Subject Name:** Molecular Biology Genetic Engineering and Plant Tissue Culture  
**Creation Date:** 2018-12-02 17:35:47  
**Duration:** 180  
**Total Marks:** 100  
**Display Marks:** Yes  
**Share Answer Key With Delivery Engine:** Yes  
**Actual Answer Key:** Yes

## Molecular Biology Genetic Engineering and Plant Tissue Culture

**Group Number :** 1  
**Group Id :** 41652958  
**Group Maximum Duration :** 0  
**Group Minimum Duration :** 120  
**Revisit allowed for view? :** No  
**Revisit allowed for edit? :** No  
**Break time:** 0  
**Group Marks:** 100

## Molecular Biology Genetic Engineering and Plant Tissue Culture

**Section Id :** 41652958  
**Section Number :** 1  
**Section type :** Online  
**Mandatory or Optional:** Mandatory  
**Number of Questions:** 100  
**Number of Questions to be attempted:** 100  
**Section Marks:** 100  
**Display Number Panel:** Yes  
**Group All Questions:** No

**Sub-Section Number:** 1  
**Sub-Section Id:** 41652959  
**Question Shuffling Allowed :** Yes

**Question Number : 1 Question Id : 4165294686 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**  
**Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

According to Chargaff's rule, the ratio that exists in DNA is:

- a. C=G
- b. C=T
- c. C > T
- d. C < T

**Question Number : 2 Question Id : 4165294687 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**  
**Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The sequence of bases in a nucleic acid is expressed in the direction:

- a. 3' to 1'
- b. 3' to 5'
- c. 5' to 3'
- d. None of the options

**Question Number : 3 Question Id : 4165294688 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The diameter of DNA helix is:

- a. 20 Å<sup>0</sup>
- b. 10 Å<sup>0</sup>
- c. 30 Å<sup>0</sup>
- d. None of the options

**Question Number : 4 Question Id : 4165294689 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

In the double helix model of DNA, how far is each base pair from the next base pair?

- a. 3.4 nm
- b. 0.34 nm
- c. 34 nm
- d. 340 nm

**Question Number : 5 Question Id : 4165294690 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The leading strand of DNA is synthesized:

- a. Discontinuously in a 5' to 3' direction
- b. Discontinuously in a 3' to 5' direction
- c. Continuously in a 3' to 5' direction
- d. Continuously in a 5' to 3' direction

**Question Number : 6 Question Id : 4165294691 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

A new copy of a DNA molecule is synthesized precisely during a process called:

- a. Translation
- b. Replication
- c. Transcription
- d. None of the options

**Question Number : 7 Question Id : 4165294692 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The enzyme that catalyzes the synthesis of DNA is called:

- a. Helicase
- b. DNA gyrase
- c. DNA polymerase
- d. Lipase

**Question Number : 8 Question Id : 4165294693 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The enzyme used to join DNA fragments is:

- a. DNA ligase
- b. DNA polymerase
- c. Primase
- d. None of the options

**Question Number : 9 Question Id : 4165294694 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Unwinding of DNA is done by:

- a. Helicase
- b. Topoisomerase
- c. Ligase
- d. Polymerase

**Question Number : 10 Question Id : 4165294695 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The enzyme that replaces the nucleotides of the RNA primer with the appropriate DNA nucleotides is:

- a. DNA polymerase II
- b. RNA polymerase
- c. DNA ligase
- d. Primase

**Question Number : 11 Question Id : 4165294696 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

DNA polymerase is an aggregate of several different protein subunits. So it is called as:

- a. Holoenzyme
- b. Replisome
- c. Primeosome
- d. None of the options

**Question Number : 12 Question Id : 4165294697 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Transcription begins when RNA polymerase binds to the:

- a. Terminator on DNA
- b. Promoter on DNA
- c. Initiator on DNA
- d. None of the options

**Question Number : 13 Question Id : 4165294698 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The complimentary messenger RNA strand that would be synthesized from the DNA base sequence of CTGAC would be:

- a. GACUG
- b. AGTUG
- c. UGACU
- d. UAGTT

**Question Number : 14 Question Id : 4165294699 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Maximum formation of mRNA occurs in:

- a. Cytoplasm
- b. Nucleoplasm
- c. Nucleolus
- d. None of the options

**Question Number : 15 Question Id : 4165294700 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Which RNA has minimum age?

- a. mRNA
- b. tRNA
- c. rRNA
- d. both mRNA and tRNA

**Question Number : 16 Question Id : 4165294701 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The GTPase \_\_\_\_\_ regulates the interaction of the receptors with their cargoes-RNA.

- a. Ran
- b. Karyopherin
- c. HnRNP K
- d. None of the options

**Question Number : 17 Question Id : 4165294702 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

In the case of mRNA transport, an export receptor called \_\_\_\_\_ is important.

- a. Dbp5
- b. Exportin-t
- c. CRM1
- d. None of the options

**Question Number : 18 Question Id : 4165294703 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The RNA which does not undergo post-transcriptional processing is:

- a. 5S rRNA
- b. mRNA
- c. tRNA
- d. None of the options

**Question Number : 19 Question Id : 4165294704 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The enzyme responsible for polyadenylation is:

- a. RNA polymerase I
- b. RNA polymerase II
- c. Poly (A) polymerase
- d. None of the options

**Question Number : 20 Question Id : 4165294705 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The transposon system which has been used extensively as an insertional tag for identifying cancer genes is:

- a. Ac/Dc element
- b. Sleeping beauty
- c. Ty1 element
- d. All of the options

**Question Number : 21 Question Id : 4165294706 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Transposable elements were discovered by:

- a. Gregor Mendel
- b. Barbara McClintock
- c. Marcus Rhoades
- d. None of the options

**Question Number : 22 Question Id : 4165294707 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Maize has \_\_\_ chromosomes.

- a. 12
- b. 10
- c. 8
- d. 9

**Question Number : 23 Question Id : 4165294708 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Which is not true for transposable elements?

- a. They may revert a gene to wild type after transposition.
- b. They are always present in all members of a species.
- c. They leave their copy after transposition.
- d. All of the options

**Question Number : 24 Question Id : 4165294709 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Genetic code consists of:

- a. 2 letters
- b. 3 letters
- c. 4 letters
- d.. 5 letters

**Question Number : 25 Question Id : 4165294710 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Degeneracy results because there are more codons than:

- a. Decodable amino acids
- b. Encodable amino acids
- c. Encodable DNA
- d. None of the options

**Question Number : 26 Question Id : 4165294711 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The process of genetic information flowing from DNA to RNA to protein is called:

- a. Gene annealing
- b. Gene mutation
- c. Gene expression
- d. None of the options

**Question Number : 27 Question Id : 4165294712 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The 'central dogma' states that biological information flows in \_\_\_\_\_ pattern.

- a. DNA-Protein-RNA
- b. DNA-RNA-Protein
- c. RNA-DNA-Protein
- d. RNA-Protein-DNA

**Question Number : 28 Question Id : 4165294713 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Out of the following which do not help in protein synthesis of prokaryotes:

- a. IF1
- b. GTP
- c. eIF1
- d. All of the options

**Question Number : 29 Question Id : 4165294714 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The energy rich molecule required for the initiation of translation is:

- a. ATP
- b. GTP
- c. AMP
- d. None of the options

**Question Number : 30 Question Id : 4165294715 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The most abundant type of RNA is:

- a. mRNA
- b. rRNA
- c. tRNA
- d. All of the options

**Question Number : 31 Question Id : 4165294716 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The eukaryotic mRNA is:

- a. Polycistronic
- b. Monocistronic
- c. Polycistronic and Monocistronic
- d. None of the options

**Question Number : 32 Question Id : 4165294717 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

In eukaryotes, translation is initiated by binding of ribosome to the:

- a. 5'cap
- b. Poly A cap
- c. Pribnow box
- d. None of the options

**Question Number : 33 Question Id : 4165294718 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The site of protein synthesis in the cell is:

- a. Ribosome
- b. Mitochondria
- c. Nucleus
- d. Golgi apparatus

**Question Number : 34 Question Id : 4165294719 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following does not occur in the function of the catabolite activator protein (CAP) of E. coli?

- a. Cyclic-AMP binds to the CAP protein.
- b. The protein changes shape.
- c. Space is increased by the binding of tryptophan.
- d. None of the options

**Question Number : 35 Question Id : 4165294720 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

What would be the effect of a mutation in the lacI gene that blocked binding of the lac repressor to the operator?

- a. The lacZYA genes would not be expressed.
- b. The lacZYA genes would be expressed constitutively.
- c. The lacZYA genes would be repressed by lactose.
- d. None of the options

**Question Number : 36 Question Id : 4165294721 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

All of the following are examples of housekeeping genes except:

- a. Beta galactosidase
- b. Ribosomal protein genes
- c. Enzymes required for basic metabolic pathways
- d. RNA Polymerase

**Question Number : 37 Question Id : 4165294722 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Nucleosomes inhibit:

- a. Activators
- b. RNA polymerase
- c. Assembly of transcription factors
- d. All of the options

**Question Number : 38 Question Id : 4165294723 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Enhancers are:

- a. Proteins located adjacent to promoters
- b. Distant sites where regulatory proteins bind
- c. Expeditors of RNA polymerase capture
- d. All of the options

**Question Number : 39 Question Id : 4165294724 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

An epigenetic change in gene expression is an \_\_\_\_\_ change that does not involve any change in the nucleotide sequence of the gene.

- a. Inherited
- b. Mutational
- c. Inherited & Mutational
- d. None of the options

**Question Number : 40 Question Id : 4165294725 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

One complete turn of a DNA double-helix measures:

- a. 2.4 nm
- b. nm
- c. 20.4 nm
- d. 2.04 nm

**Question Number : 41 Question Id : 4165294726 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Arthur Kornberg purified \_\_\_\_\_ enzymes from E. coli.

- a. DNA polymerase
- b. RNA polymerase
- c. Taq polymerase
- d. None of the options

**Question Number : 42 Question Id : 4165294727 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

For isolating DNA from plants, the most suitable method is:

- a. CTAB method
- b. SDS-phenol extraction
- c. SDS-proteinase K treatment
- d. None of the options

**Question Number : 43 Question Id : 4165294728 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

DNA extraction from plant tissue is difficult due to:

- a. Presence of large amount of DNA
- b. Presence of secondary metabolites and polysaccharides
- c. Presence of large amount of DNA & secondary metabolites and polysaccharides
- d. None of the options

**Question Number : 44 Question Id : 4165294729 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Which are the subunits of DNA:

- a. Amino acids
- b. Nucleotides
- c. Monosaccharide
- d. None of the options

**Question Number : 45 Question Id : 4165294730 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

pBR 322 has /have which of the following selection marker?

- a. Amp<sup>r</sup>
- b. Tet<sup>r</sup>
- c. Amp<sup>r</sup> and Tet<sup>r</sup>
- d. Kan<sup>r</sup>

**Question Number : 46 Question Id : 4165294731 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**



In pBR322, pBR stands for:

- a. Plasmid bacterial recombination
- b. Plasmid bacterial replication
- c. Plasmid Boliver and Rodriguez
- d. None of the options

**Question Number : 47 Question Id : 4165294732 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The enzyme used to cut DNA molecule in rDNA technology is

- a. Ligase
- b. Restriction enzymes
- c. DNA polymerase
- d. None of the options

**Question Number : 48 Question Id : 4165294733 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The enzyme used to remove phosphate group from the 5' end of DNA is:

- a. Alkaline phosphatase
- b. Polynucleotide kinases
- c. Ribo nuclease H
- d. Restriction enzymes

**Question Number : 49 Question Id : 4165294734 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The enzyme that adds mono-nucleotide triphosphates to the 3' OH group of DNA fragment is:

- a. Terminal nucleotidyltranseferase
- b. Polynucleotidetransferase
- c. Terminal nucleotidyltranseferase & Polynucleotidetransferase
- d. None of the options

**Question Number : 50 Question Id : 4165294735 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The particle gun for gene transfer was introduced by:

- a. John Sanford
- b. Klein
- c. John Sanford & Klein
- d. None of the options

**Question Number : 51 Question Id : 4165294736 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The vectors used in genetic engineering should possess:

- a. Multiple unique restriction sites
- b. Bacterial origins of replication
- c. Selection marker
- d. All of the options

**Question Number : 52 Question Id : 4165294737 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Expression vectors differ from cloning vectors in having:

- a. Control elements
- b. Origin replication
- c. Selection markers
- d. All of the options

**Question Number : 53 Question Id : 4165294738 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Replication is initiated at sequence known as:

- a. Origin of replication
- b. Multiple cloning sites
- c. Origin of replication & Multiple cloning sites
- d. None of the options

**Question Number : 54 Question Id : 4165294739 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The expression vectors contain sequences for \_\_\_\_\_ and translation and cDNA of the gene of interest.

- a. Transcription
- b. Restriction sites
- c. Transcription & Restriction sites
- d. None of the options

**Question Number : 55 Question Id : 4165294740 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Northern hybridization is a technique for:

- a. Detection of DNA fragments
- b. Detection of RNA fragments
- c. Detection of protein
- d. Detection of Enzymes

**Question Number : 56 Question Id : 4165294741 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The technique used in DNA finger printing is:

- a. Southern blotting technique
- b. Northern blotting technique
- c. Western blotting technique
- d. None of the options

**Question Number : 57 Question Id : 4165294742 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The technique suitable for identifying mRNA molecule in sample is:

- a. Western blotting technique
- b. Northern blotting technique
- c. Western & Northern blotting techniques
- d. Southern blotting technique

**Question Number : 58 Question Id : 4165294743 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The PCR technique was developed by:

- a. Karymullis
- b. Kohler
- c. Milestein
- d. A. Jefferey

**Question Number : 59 Question Id : 4165294744 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Polymerase chain reaction basically consists of:

- a. Two steps
- b. Three steps
- c. Four steps
- d. One step

**Question Number : 60 Question Id : 4165294745 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

RAPD markers are:

- a. Decamer
- b. Dominant type markers
- c. Decamer & Dominant type markers
- d. Co-dominant type markers

**Question Number : 61 Question Id : 4165294746 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

To visualize the amplified regions of DNA \_\_\_\_\_ stain is used.

- a. Xylene cynol
- b. Ethidium bromide (EtBr)
- c. Bromophenol Blue
- d. All of the options

**Question Number : 62 Question Id : 4165294747 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Cell differentiation in plants is:

- a. Irreversible
- b. Reversible
- c. Irreversible & Reversible
- d. None of the options

**Question Number : 63 Question Id : 4165294748 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The phenomenon of conversion of callus tissue to whole plant or plant organs involve:

- a. Dedifferentiation
- b. Redifferentiation
- c. Dedifferentiation & Redifferentiation
- d. None of the options

**Question Number : 64 Question Id : 4165294749 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

In plant cell cultures high concentration of \_\_\_\_\_ stimulates root induction.

- a. Auxin
- b. Cytokinin
- c. Gibberellin
- d. Ethylene

**Question Number : 65 Question Id : 4165294750 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

In plant cell culture medium, iron is supplied in the form of:

- a.  $\text{FeSO}_4$
- b. Fe-EDTA Complex
- c.  $\text{FeCl}_3$
- d.  $\text{Fe}_3(\text{PO}_4)_2$

**Question Number : 66 Question Id : 4165294751 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

In plant cell culture medium, Zn and Mn are added in the form of:

- a. Carbonates
- b. Phosphates
- c. Sulphates
- d. None of the options

**Question Number : 67 Question Id : 4165294752 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The nutrient medium is sterilized by:

- a. Autoclaving
- b. Boiling
- c. Autoclaving & Boiling
- d. None of the options

**Question Number : 68 Question Id : 4165294753 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Tobacco leaf tissue is treated with \_\_\_\_\_ to isolate Single cell.

- a. Pectinase and potassium dextran sulphate
- b. Pectinase and cellulose
- c. Pectinase and amylase
- d. None of the options

**Question Number : 69 Question Id : 4165294754 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Chemical method used in synchronization of suspension culture is:

- a. 5-aminourail, 5-fluorodexypurine, hydroxyurea
- b. Limited thymidine
- c. 2,4- Dichlorophenoxy acetic acid
- d. None of the options

**Question Number : 70 Question Id : 4165294755 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Inhibition synchronization is achieved by:

- a. Mitotic arrest
- b. Starvation
- c. Temperature shock
- d. None of the options

**Question Number : 71 Question Id : 4165294756 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Somaclonal variation refers to changes in:

- a. Ploidy
- b. Morphology
- c. Ploidy & Morphology
- d. None of the options

**Question Number : 72 Question Id : 4165294757 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Which statement/s is/are true:

- a. The undifferentiated cells first acquire competence and then become irreversibly committed
- b. The undifferentiated cells first become irreversibly committed and then acquire competence.
- c. The undifferentiated cells first acquire competence and then become irreversibly committed. They also first become irreversibly committed and then acquire competence.
- d. None of the options

**Question Number : 73 Question Id : 4165294758 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Generally subculture of plant cells should be performed within:

- a. 5-10 days of culture
- b. 15-20 days of culture
- c. 25-30 days of culture
- d. After one month

**Question Number : 74 Question Id : 4165294759 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Somatic embryogenesis is:

- a. Germ line cells developing into embryos
- b. Non-germ line cells developing into embryos
- c. Embryos developing from zygote
- d. None of the options

**Question Number : 75 Question Id : 4165294760 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Somatic embryogenesis can be initiated by:

- a. Pre-embryogenic determined cells.
- b. Induced embryogenic determined cells.
- c. Pre-embryogenic determined cells & Induced embryogenic determined cells
- d. None of the options

**Question Number : 76 Question Id : 4165294761 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Zygotic embryo differs from somatic embryo in:

- a. Acquiring various shapes during maturation
- b. In origin
- c. In polarity
- d. All of the options

**Question Number : 77 Question Id : 4165294762 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The Housekeeping genes are responsible for:

- Cell wall synthesis in new embryogenic tissues.
- Allowing the cells to proceed from the G1 phase into the S phase of the mitotic cell cycle.
- Transition of the globular stage embryo to the heart stage embryo.
- None of the options

**Question Number : 78 Question Id : 4165294763 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The best propagule for synthetic seed preparation is

- Root tips
- Somatic embryo
- Stem
- Root

**Question Number : 79 Question Id : 4165294764 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The chemical used in protoplast viability test is:

- Calcoflour
- FDA
- Saffranin
- All of the options

**Question Number : 80 Question Id : 4165294765 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Regeneration of complete plants through protoplasts was first reported in:

- Datura
- Petunia
- Nicotianatabacum
- Atropa

**Question Number : 81 Question Id : 4165294766 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The protoplasts of two different species fuse to form a:

- Homokaryon
- Heterokaryon
- Embryoid
- None of the options

**Question Number : 82 Question Id : 4165294767 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Selection of heterokaryon can be done by:

- Visual observation
- Selectable Markers
- Visual observation & Selectable Markers
- None of the options

**Question Number : 83 Question Id : 4165294768 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Protoplasts possess \_\_\_\_\_ charge.

- Positive
- Negative
- Neutral
- None of the options

Question Number : 84 Question Id : 4165294769 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Sexual incompatibility between different species of plants can be overcome by:

- a. Inbreeding
- b. In vitro fusion of protoplast
- c. In vitro fertilization
- d. None of the options

Question Number : 85 Question Id : 4165294770 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A new approach to study genetic stability in the cryopreserved plant materials is:

- a. Cryobionomics
- b. Cryopreservation
- c. Cryonomics
- d. None of the options

Question Number : 86 Question Id : 4165294771 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The biosynthesis of therapeutically useful compounds in medicinal plants can be generated by manipulating the genes coding for the key enzymes, is:

- a. Gene engineering
- b. Metabolic engineering
- c. Cytoplasmic engineering
- d. Proteomics

Question Number : 87 Question Id : 4165294772 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

*Panax ginseng* cells were induced to give high yields of oligosaccharides, by treatment of:

- a. MNNG
- b. UV
- c. MJ
- d. None of the options

Question Number : 88 Question Id : 4165294773 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Hairy roots are transformed plant roots by \_\_\_\_\_ carrying the Ri T-DNA plasmid.

- a. *Agrobacterium rhizogenes*
- b. *Agrobacterium tumefaciens*
- c. *Agrobacterium aquaticus*
- d. All of the options

Question Number : 89 Question Id : 4165294774 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A(n) \_\_\_\_\_ is an excised piece of plant tissue used in micropropagation.

- a. Micro shoot
- b. Callus
- c. Explant
- d. All of the options

Question Number : 90 Question Id : 4165294775 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is considered as the disadvantage of plant tissue culture for clonal propagation?

- a. Multiplication of sexually derived sterile hybrids
- b. High cost of the propagule
- c. Less multiplication of disease free plants
- d. All of the options

**Question Number : 91 Question Id : 4165294776 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Selective \_\_\_\_\_ of bulbosum chromosomes is observed in distant hybridization crosses among *Hordeumbulbosum* and *H. vulgare*

- a. Elimination
- b. Duplication
- c. Addition
- d. None of the options

**Question Number : 92 Question Id : 4165294777 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Anther culture technique was developed for the first time by:

- a. Murashige and Skoog
- b. Guha and Maheshwari
- c. Gamborg et al
- d. Haberlandt

**Question Number : 93 Question Id : 4165294778 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Advantage of microprojectile method over microinjection method for gene transfer in plants includes:

- a. Method is universal in its application irrespective of all shape, size, type and presence or absence of cell wall
- b. Gene can be transferred to many cells simultaneously
- c. Simple
- d. All of the options

**Question Number : 94 Question Id : 4165294779 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Kanamycins, neomycin, paramomycin and geneticin, are substrates for:

- a. npt II
- b. GFP
- c. GUS
- d. All of the options

**Question Number : 95 Question Id : 4165294780 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

\_\_\_\_\_ is a reporter gene:

- a. GUS gene
- b. Bar gene
- c. hpt gene
- d. npt gene

**Question Number : 96 Question Id : 4165294781 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**



Microprojectile method of gene transfer in plants involves delivery of DNA with the help of:

- a. Micromanipulator
- b. Bolistics
- c. Needles
- d. None of the options

**Question Number : 97 Question Id : 4165294782 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The hpt gene provides resistance to:

- a. Kanamycin
- b. Hygromycin B antibiotic
- c. Kanamycin & Hygromycin B antibiotic
- d. Neomycin

**Question Number : 98 Question Id : 4165294783 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Green Fluorescent Protein was initially discovered by:

- a. Martin C and Osamu S and Roger Y. Tsien
- b. Harrison M, Birch RJ and Roger Y. Tsien
- c. Harrison M, Birch RJ and Jackson MA
- d. None of the options

**Question Number : 99 Question Id : 4165294784 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

GFP was isolated from:

- a. *Agrobacterium tumefaciens*
- b. *Aequorea victoria*
- c. Green alga
- d. None of the options

**Question Number : 100 Question Id : 4165294785 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The use of reporter gene benefits with analyzing the transgene expression:

- a. Without destroying the cells
- b. By destroying the cells
- c. With use of herbicide resistance
- d. All of the options