Plant Biotechnology - Question bank

1. Match the following terms with their definitions:

PH meter	High Performance Liquid Chromatography
Normality	Equal to the gram equivalent weight of a solute per liter of solution.
Molarity	Preparation of Working Solutions from Concentrated Stock Solutions
HPLC	Used to determine the density of a solution.
GM plants	A moving stream of liquid in HPLC that passes through a column
Thermal Cycler	Used for measuring hydrogen ion concentration of solutions and mixtures.
Mobile Phase	Measuring liquids and dispensing them from one vessel to the other
Nanodrop	Used for amplification of a specific section of DNA by PCR
Dilution	Number of moles of solute per liter of solution.
Pipette	Plants Containing transgenes
Proteins	The exchange of corresponding DNA segments between adjacent chromosomes during the special type of cell division that results in the production of new genetic makeup.
Genome	Are changes in the DNA sequence of a cell's genome caused by radiation, viruses, transposons and mutagenic chemicals,
Mutation	Stretch of DNA that codes for a type of protein that has a function in the organism.
Introns	Set of coding regions in a gene
Genes	Non-coding regions of a gene
Recombination	The genetic complement of an organism, including all of its GENES, as represented in its DNA

Nucleic Acid   Is the process by which information from a gene is used in the synthesis of a functional gene product (proteins)

Exons   Are amphoteric compounds, contain both acidic and basic residues.

Gene expression   Are not amphoteric. They remain negative at any pH used for electrophoresis.

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2. Answer the following questions:

a. Compare HPLC and GC according to their sample volatility and sample size

b. Compare NanoDrop and traditional spectrophotometry.

c. Define Biotechnology and enumerate the biotechnological techniques that used in agriculture

d. There are two main potential sources of error when using the absorbance spectrophotometer. Briefly mention them and how they could be avoided.

e. What are the basic structure of the spectrometers? (In order)

f. Write five of the PCR applications.

g. (Polymerase Chain Reaction) why is it called Polymerase and why is it called Chain?

h. Define Plant Tissue Culture and what are the factors that affect the explant selection.

3. Fill in the blanks:

1. A moving stream of liquid in HPLC called _____ that passes through a column packed with particles of _____.

2. The retention time _____.

3. _____ oligonucleotides that define the sequence to be amplified

4. _____ DNA nucleotides bases (A, C, G and T) are the building blocks of DNA and are needed to construct the new strand of DNA

5. Plants containing transgenes are often called _____.

6. PCR protocol starts with double stranded DNA and has three stages 1._____ 2. _____ 3. _____.

7. Gel Electrophoresis involves the separation of components of a sample by _____of ions by attraction or repulsion in an applied dc electric field.

8. _____ is added to stain the gel and/or running buffer before the gel is run.

9. In genes, small genetic changes called _____ while, large genetic change, known as _____.

10. in Plant Tissue Culture, culture media are generally composed of _____, _____, _____ and _____.