BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – B.Sc.(Ag)-Hons-2024
Course Name – Fundamentals of Plant Biochemistry and Biotechnology
Course Code - CC-BAG173(T)
(Semester I)

Full Marks : 50 **Time : 2:0 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 20=20

1. *Choose the correct alternative from the following :*

(i) Which German Chemist first introduced the term Bio-chemistry ?
a) Louis Pasteur b) Carl Neuberg
c) Emil Fischer d) Watson and Crick

(ii) Select the correct empirical formula $(CH_2O)_n$ of the following compounds.
a) Protein b) Lipids
c) Carbohydrates d) Vitamins

(iii) Which one of the followings is perfectly representing-Oligosaccharides.
a) Mono saccharides b) Poly saccharides
c) Tri saccharides d) None of these

(iv) Name the event-A process for inserting foreign DNA into bacteria.
a) Genetic Engineering b) Regeneration
c) Transformation d) Transduction

(v) Select the correct terminology about Plasmids DNA.
a) Self-replicating b) Double stranded
c) Circular d) All of these

(vi) Find the correct feature about - The natural genetic engineer, Agrobacterium tumefaciens.
a) Soil Bacterium b) Air Bacterium
c) Marine Bacterium d) None of these

(vii) Select the correct terminology about the statement- An unorganized mass of cell with amorphous structure developed during the process of plant tissue culture.
a) Callus b) Somatic embryo
c) Plantlet d) Explant

(viii) Select the perfect stage of- mRNA synthesis.
a) Transcription b) Translation

c) Replication
d) Transduction

(ix) Which of the following monosaccharides is not an aldose?

a) Erythrose
b) Fructose
c) Glucose
d) Ribose

(x) In which type of plant, Gene Gun is highly preferable to introduce DNA into plant genome ?

a) Monocot plants
b) Dicot Plants
c) Gymnosperm
d) Pteridophyte

(xi) Select the right instrument type where the Denaturation, Annealing and Extension are different steps involved in a cyclic reaction process.

a) Autoclave
b) Incubator
c) Marker
d) PCR

(xii) Find the suitable explant which can be taken for producing virus free plant.

a) Shoot tip
b) Leaf bit
c) Stem bit
d) Root

(xiii) Which scientist coined the term -Totipotency ?

a) Duharmel du Monceau
b) Morgan, T.H.
c) Haberlandt
d) Rechinger

(xiv) Which one of the following options is correct against the statement- Organogenesis means genesis of organ(s) like?

a) shoots
b) roots
c) leaves and flowers
d) All of these

(xv) Which one of the following is popularly known as-Bulbosum technique?

a) Chromosome elimination
b) Chromosome elimination following interspecific hybridization
c) Chromosome elimination following intraspecific hybridization
d) None of these

(xvi) Whic among the following enzymes cut DNA at specific locations based on the nucleotide sequence ?

a) Restriction enzymes
b) DNA ligase
c) Nuclease
d) None of these

(xvii) Which one of the follwing diseases is caused by Agrobacterium rhizogenes ?

a) Crown gall
b) Hairy root
c) Root rot
d) None of these

(xviii) Show which propety is related to the GM variety of tomato, Flavr-Savr™ ?

a) Delayed ripening
b) Resistance to fruit borer
c) Resistant to leaf miner
d) All of these

(xix) Who for the first time used the RFLP markers for the construction of genetic maps ?

a) Alec Jeffrey
b) Botstein
c) Hatada
d) None of these

(xx) Which of the following is absent in DNA ?

a) Adenine
b) Guanine
c) Cytocine
d) Uracil

Group-B

(Short Answer Type Questions) 2.5 x 10=25

2. What are the reactions included in preparatory phase of glycolysis? (2.5)
3. Briefly explain Write Michaelis–Menten equation. (2.5)
4. What is the significance of PCR techniques in plant biotechnology? (2.5)

5. Explain the unique properties of water and how they are relevant to plant biochemistry. (2.5)
6. Define pH and discuss its importance in plant cells. How do buffers maintain pH homeostasis? (2.5)
7. Briefly explain the structural properties of monosaccharides. (2.5)
8. Develop an outline on- Callus in Plant Tissue Culture. (2.5)
9. Define allosteric enzymes (2.5)
10. What are the potential benefits of GM plants? (2.5)
11. Develop an outline on Polymerase Chain Reaction and its use in Plant Biotechnology. (2.5)

OR

Develop an outline on- Cloning and transformation of Plant gene. (2.5)

Group-C

(Long Answer Type Questions) 5 x 1=5

12. Justify the applications of PCR in plant biotechnology and crop improvement. (5)

OR

Justify the mechanism of rDNA technology in plant biotechnology. (5)

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