17219

BRAINWARE UNIVERSITY

Term End Examination 2025-2026
Programme – B.Sc.(Ag)-Hons-2023
Course Name – Micro Propagation Technologies
Course Code - EC-BAG571D (T)
(Semester V)

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) Who is regarded as the father of plant tissue culture?
a) Ball b) Morel
c) Haberlandt d) Skoog

(ii) 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

(iii) What is the main characteristic of meristematic cells?
a) Thick cell walls b) High mitotic activity
c) Large intercellular spaces d) Lack of nucleus

(iv) Which plant hormone is most commonly used to induce rooting in micropropagation?
a) Cytokinin b) Auxin
c) Gibberellin d) Ethylene

(v) What is the primary gelling agent used in solid plant tissue culture media?
a) Glucose b) Agar
c) Polyacrylamide d) Gelatin

(vi) Which technique can be used for producing genetically identical individuals from a single parent?
a) Apomixis b) Clonal propagation
c) Cross pollination d) Hybridization

(vii) Select the right term which is used to denote the process of formation of unorganized tissues from the highly organized tissues.
a) Differentiation b) De-differentiation
c) Re-differentiation d) Regeneration

(viii) Find the suitable explant which can be taken for producing virus free plant.
a) Shoot tip b) Leaf bit

c) Stem bit
d) Root

(ix) Who coined the term -Totipotency?

a) T.H. Morgan
b) G. Haberlandt
c) C. Darwin
d) M. Smith

(x) Select: Which of the following is a method of clonal propagation?

a) Cutting
b) Grafting
c) Micropropagation
d) Layering

(xi) Recall: How many stages are there in Micropropagation?

a) 2
b) 3
c) 4
d) 5

(xii) The first haploid plant through anther culture was produced from:

a) Capsicum
b) Citrus
c) Datura
d) Tobacco

(xiii) Why are meristem tips often virus-free?

a) Lack of vascular connection at the tip inhibits virus movement
b) High moisture content prevents virus survival
c) Meristem cells are dead tissues
d) They contain high starch

(xiv) Which process involves shoot bud formation?

a) Somatic embryogenesis
b) Organogenesis
c) Rhizogenesis
d) Callogenesis

(xv) Identify: Which plant growth regulator is critical for shoot multiplication?

a) Cytokinin
b) Auxin
c) Gibberellin
d) Ethylene

(xvi) What is the application of Micropropagation in the flower industry?

a) Production of virus-free plants
b) Faster germination
c) Hybrid seed development
d) Pollination control

(xvii) Recall: What is Stage 4 of Micropropagation?

a) Acclimatization
b) Initiation
c) Multiplication
d) Rooting

(xviii) To prevent browning in cultures from mature mango explants, what can be done among followings?

a) Increase agar concentration
b) Add ascorbic acid or activated charcoal to the medium
c) Use high sucrose
d) Keep culture in continuous light

(xix) How is the culture medium sterilized?

a) Boiling
b) Autoclaving
c) Filtering
d) Sun drying

(xx) Which type of organogenesis involves callus formation?

a) Direct
b) Indirect
c) Lateral
d) Apical

Group-B

(Short Answer Type Questions) 2.5 x 10=25

2. Classify the different types of plant tissue culture techniques. (2.5)
3. Show how auxins and cytokinins influence organogenesis. (2.5)
4. When is meristem culture used in plant breeding? (2.5)
5. Why is micropropagation important for clonal mass propagation? (2.5)
6. Judge the major problems faced in micropropagation and suggest solutions. (2.5)
7. Critique the application of chemotherapy and thermotherapy combined with tissue culture for virus eradication in plants. (2.5)

8. Evaluate the use of molecular tools in confirming clonal fidelity of tissue culture regenerants. (2.5)
9. Assess the advantages of micropropagation over traditional plant propagation. (2.5)
10. Explain a tissue culture protocol for producing synthetic seeds. (2.5)
11. Assess the principles underpinning meristem culture for virus elimination (2.5)

OR

Justify the use of liquid nitrogen for long-term storage in cryopreservation. (2.5)

Group-C

(Long Answer Type Questions) 5 x 1=5

12. Summarize a protocol for virus elimination in plants using meristem-tip culture. (5)

OR

Deduct the role of somaclonal variation in scientific agriculture. (5)

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