

Multiple Choice Questions (MCQs)

1. The most commonly used basal medium in plant tissue culture is:
A) White's medium
B) MS medium
C) B5 medium
D) Nitsch medium
Answer: B
2. Callus formation is mainly induced by:
A) Gibberellins
B) Auxin
C) Cytokinin
D) Ethylene
Answer: B
3. Which hormone promotes shoot formation?
A) Auxin
B) Cytokinin
C) ABA
D) Ethylene
Answer: B
4. The process of growing plants in artificial conditions is called:
A) In vivo
B) In situ
C) In vitro
D) Ex vitro
Answer: C
5. Somatic embryogenesis involves development from:
A) Zygote
B) Somatic cells
C) Gametes
D) Seeds
Answer: B
6. Micropropagation is mainly used for:
A) Mutation
B) Mass multiplication
C) Hybridization
D) Fertilization
Answer: B
7. Haploid plants can be produced from:
A) Roots
B) Leaves

C) Anthers

D) Stems

Answer: C

8. Protoplasts are cells without:

A) Nucleus

B) Cytoplasm

C) Cell wall

D) Vacuole

Answer: C

9. Cryopreservation uses:

A) High temperature

B) Room temperature

C) Low temperature

D) Boiling temperature

Answer: C

10. Secondary metabolites are:

A) Essential for growth

B) By-products

C) Energy sources

D) Structural components

Answer: B

11. Which is a secondary metabolite?

A) Protein

B) Alkaloid

C) Carbohydrate

D) Lipid

Answer: B

12. Elicitors help in:

A) Growth inhibition

B) Increasing metabolite production

C) Cell death

D) Photosynthesis

Answer: B

13. Hairy root cultures are induced by:

A) *E. coli*

B) *Agrobacterium rhizogenes*

C) *Bacillus*

D) Yeast

Answer: B

14. Immobilization of cells helps in:

A) Cell death

B) Easy handling

C) DNA damage

D) Mutation

Answer: B

15. Somaclonal variation occurs in:

A) Natural plants

B) Tissue culture

C) Seeds

D) Fruits

Answer: B

16. Synthetic seeds are made from:

A) Zygotes

B) Embryos

C) Somatic embryos

D) Roots

Answer: C

17. Cybrids are formed by:

A) Sexual reproduction

B) Protoplast fusion

C) Mutation

D) Hybridization

Answer: B

18. Organogenesis refers to:

A) Organ formation

B) Cell death

C) DNA replication

D) Photosynthesis

Answer: A

19. Suspension culture contains:

A) Solid medium

B) Liquid medium

C) Gas medium

D) Agar only

Answer: B

20. Permeabilization helps in:

A) Reducing cell growth

B) Releasing metabolites

C) Killing cells

D) DNA synthesis

Answer: B

Fill in the Blanks

1. MS medium was developed by _____ and Skoog.
Answer: Murashige
2. The process of growing cells outside the organism is called _____.
Answer: In vitro culture
3. _____ hormone promotes root formation.
Answer: Auxin
4. Cytokinins promote _____ formation.
Answer: Shoot
5. Callus is a mass of _____ cells.
Answer: Undifferentiated
6. _____ culture involves growth in liquid medium.
Answer: Suspension
7. Haploid plants have _____ set of chromosomes.
Answer: Single
8. Protoplasts are obtained by removing _____.
Answer: Cell wall
9. Cryopreservation uses _____ temperature.
Answer: Low
10. Somatic embryos arise from _____ cells.
Answer: Somatic
11. Secondary metabolites are _____ essential for growth.
Answer: Not
12. Alkaloids are an example of _____ metabolites.
Answer: Secondary
13. _____ are substances that enhance metabolite production.
Answer: Elicitors
14. Hairy roots are induced by _____.
Answer: Agrobacterium rhizogenes
15. Immobilized cells are fixed in a _____ matrix.
Answer: Solid
16. Somaclonal variation occurs in _____ culture.
Answer: Tissue
17. Synthetic seeds are produced from _____ embryos.
Answer: Somatic
18. Organogenesis means formation of _____.
Answer: Organs
19. Permeabilization increases _____ of metabolites.
Answer: Release
20. Cell cultures are used for production of _____ compounds.
Answer: Commercial

III. Answer the Following questions

1. What is plant tissue culture
2. What is Micro Propagation
3. What is meristem culture
4. What is plant growth Regulators
5. What are cybrids