

# MSc BIOTECHNOLOGY II YEAR

## SEMESTER – IV {PLANT BIOTECHNOLOGY}

### INTERNAL – I

## QUESTION BANK

# 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