

TELANGANA UNIVERISTY
S.S.R DEGREE COLLEGE NIZAMABAD
SEM – VI INTERNAL ASSESSMENT – I
BOTANY
QUESTION BANK

Multiple Choice Questions (MCQs)

1. The basic principle underlying plant tissue culture is:

- A. Differentiation
- B. Dedifferentiation
- C. Totipotency
- D. Redifferentiation

Answer: C. Totipotency

2. The explant refers to:

- A. Whole plant grown in vitro
- B. Any plant part used for culture
- C. Callus tissue
- D. Protoplast

Answer: B. Any plant part used for culture

3. The most commonly used basal medium in plant tissue culture is:

- A. White's medium
- B. Knop's medium
- C. Murashige and Skoog medium
- D. Gamborg's medium

Answer: C. Murashige and Skoog medium

4. Which hormone mainly promotes cell division in tissue culture?

- A. Auxin
- B. Cytokinin
- C. Gibberellin
- D. Ethylene

Answer: B. Cytokinin

5. High auxin and low cytokinin concentration favors formation of:

- A. Shoots

- B. Roots
- C. Callus
- D. Embryos

Answer: B. Roots

6. Micropropagation is mainly used for:

- A. Genetic variation
- B. Mass multiplication of plants
- C. Protoplast fusion
- D. Secondary metabolite extraction

Answer: B. Mass multiplication of plants

7. Anther culture is mainly used for production of:

- A. Triploids
- B. Tetraploids
- C. Haploids
- D. Hybrids

Answer: C. Haploids

8. The culture of isolated ovules is known as:

- A. Embryo culture
- B. Ovule culture
- C. Anther culture
- D. Endosperm culture

Answer: B. Ovule culture

9. Callus is best defined as:

- A. Organized tissue
- B. Undifferentiated mass of cells
- C. Meristematic tissue
- D. Vascular tissue

Answer: B. Undifferentiated mass of cells

10. Protoplasts are isolated by using:

- A. Antibiotics
- B. Growth regulators
- C. Cell wall degrading enzymes
- D. Vitamins

Answer: C. Cell wall degrading enzymes

11. Fusion of protoplasts from two different species results in:

- A. Somaclones
- B. Cybrids

C. Somatic hybrids

D. Haploids

Answer: C. Somatic hybrids

12. Somatic embryogenesis refers to:

A. Embryo development from zygote

B. Embryo development from somatic cells

C. Embryo culture

D. Endosperm development

Answer: B. Embryo development from somatic cells

13. Hairy root culture is induced by:

A. *Agrobacterium tumefaciens*

B. *Agrobacterium rhizogenes*

C. *Bacillus thuringiensis*

D. *Rhizobium*

Answer: B. *Agrobacterium rhizogenes*

14. One major application of hairy root culture is production of:

A. Primary metabolites

B. Secondary metabolites

C. Proteins

D. Vitamins

Answer: B. Secondary metabolites

15. Somaclonal variation arises due to:

A. Sexual reproduction

B. Genetic stability

C. In vitro culture conditions

D. Natural selection

Answer: C. In vitro culture conditions

16. Synthetic seeds are produced by encapsulation of:

A. Zygotic embryos

B. Somatic embryos

C. Anthers

D. Pollen grains

Answer: B. Somatic embryos

17. Cryopreservation is the storage of germplasm at:

A. 0°C

B. -20°C

C. -80°C

D. -196°C

Answer: D. -196°C

18. Germplasm conservation mainly aims at:

- A. Increasing yield
- B. Preserving genetic diversity
- C. Hybrid production
- D. Mutation breeding

Answer: B. Preserving genetic diversity

19. Cybrids contain genetic material from:

- A. Only nucleus of both parents
- B. Only cytoplasm of one parent
- C. Nuclear genome of one parent and cytoplasm of another
- D. Equal nuclear genome of both parents

Answer: C. Nuclear genome of one parent and cytoplasm of another

20. Embryo culture is mainly used to:

- A. Induce mutations
- B. Overcome seed dormancy and embryo abortion
- C. Produce callus
- D. Produce secondary metabolites

Answer: B. Overcome seed dormancy and embryo abortion

II. Fill in the Blanks

1. The inherent capacity of a plant cell to regenerate into a whole plant is called ____.

Answer: Totipotency

2. The plant part used to initiate a tissue culture is known as ____.

Answer: Explant

3. The most commonly used nutrient medium in plant tissue culture is ____ medium.

Answer: Murashige and Skoog (MS)

4. The process of growing plant cells or tissues under sterile conditions is called ____.

Answer: Tissue culture

5. The hormone mainly responsible for shoot formation in culture is ____.

Answer: Cytokinin

6. A mass of unorganized, actively dividing cells formed in culture is called ____.

Answer: Callus

7. Development of organs like root and shoot from callus is known as ____.

Answer: Organogenesis

8.The formation of embryos from somatic cells is termed ____ embryogenesis.

Answer: Somatic

9.Culture of isolated anthers for haploid production is called ____ culture.

Answer: Anther

10.The technique of rapid clonal multiplication of plants in vitro is known as ____.

Answer: Micropropagation

11.Protoplasts are plant cells without ____.

Answer: Cell wall

12.Fusion of two protoplasts from different species results in ____ hybrids.

Answer: Somatic

13.Hairy root cultures are induced by ____ rhizogenes.

Answer: Agrobacterium

14.Variations observed among plants regenerated from tissue culture are called ____ variation.

Answer: Somaclonal

15.Artificial seeds produced by encapsulation of embryos are called ____ seeds.

Answer: Synthetic

16.Storage of plant germplasm at ultra-low temperature is known as ____.

Answer: Cryopreservation

17.Haploid plants contain ____ set(s) of chromosomes.

Answer: One

18.Triploid plants possess ____ sets of chromosomes.

Answer: Three

19.Cybrids contain nuclear genome of one parent and ____ genome of another.

Answer: Cytoplasmic

20.Preservation of genetic resources of plants is referred to as ____ conservation.

Answer: Germplasm

III. One-Word Questions with Answers

1.What is totipotency?

Ans: Ability of a single plant cell to develop into a complete plant

2. What is explant?

Ans: Plant part used to initiate tissue culture

3. What is callus?

Ans: Unorganized mass of actively dividing cells in culture

4. What is micropropagation

Ans: In vitro clonal multiplication technique

5. What is embryogenesis?

Ans: Embryo formation from somatic cells

6. What is Agrobacterium?

Ans: Bacterium used for induction of hairy roots

7. What is somaclonal variation?

Ans: Variation arising in tissue-culture-derived plants

8. What is synthetic seed?

Ans: Encapsulated artificial plant propagules

9. What is cryopreservation?

Ans: Ultra-low temperature storage of germplasm

10. What is somatic Hybrid?

Ans: Hybrid formed by fusion of protoplasts