



BIOLOGY

BOOKS - SARAS PUBLICATION

PLANT TISSUE CULTURE

Exercise

1. (i) Define tissue culture.

(ii) Explain the basic concepts involved in plant tissue culture.



Watch Video Solution

2. Define tissue culture.



Watch Video Solution

3. What is pomato?



Watch Video Solution

4. What is Agar? Mention its role in plant tissue culture.



[Watch Video Solution](#)

5. What is a callus?



[Watch Video Solution](#)

6. What is hardening?



[Watch Video Solution](#)

7. What are secondary metabolites?



[Watch Video Solution](#)

8. Define somaclonal variations.



[Watch Video Solution](#)

9. Define gametoclonal variations.



[Watch Video Solution](#)

10. Define cell culture.



Watch Video Solution

11. What is chemically defined medium?



Watch Video Solution

12. Comment on cybrid.



Watch Video Solution

13. What is ELSI?



Watch Video Solution

Exercise

1. The time duration for sterilization process by using autoclave is _____ minutes and the temperature is _____

A. 10 to 30 minutes and ○ 125C

B. 15 to 30 minutes and $\circ 125^{\circ}\text{C}$

C. 15 to 20 minutes and $\circ 125^{\circ}\text{C}$

D. 10 to 20 minutes and $\circ 121^{\circ}\text{C}$

Answer:



Watch Video Solution

2. Select the incorrect statement from given statement.

- A. A tonic used for cardiac arrest is obtained from *Digitalis purpurea*
- B. Medicine used to treat Rheumatic pain is extracted from *Capsicum annum*
- C. An anti malarial drug is isolated from *Cinchona officinalis*
- D. Anti carcinogenic property is not seen in *Catharanthus roseus*

Answer:



Watch Video Solution

3. Solidifying agent used in plant tissue culture is

- A. Nicotinic acid
- B. Cobaltous chloride
- C. EDTA
- D. Agar

Answer:



Watch Video Solution

4. Which one is not a secondary metabolite?

A. Alkaloid

B. Phenolic compound

C. Citric acid

D. Codeine

Answer:



Watch Video Solution

5. Identify the correct order

Embryo

Explant in nutrient medium

Callus

Plantlet

A. Embryo

B. Explant in nutrient medium

C. Callus

D. Plantlet

Answer:



[Watch Video Solution](#)

6. How will you avoid the growing of microbes in nutrient medium during culture process?

What are the techniques used to remove the microbes?



[Watch Video Solution](#)

7. Give the examples for micro propagation performed plants.





[Watch Video Solution](#)

8. Explain the basic concepts involved in plant tissue culture.



[Watch Video Solution](#)

9. Define somaclonal variations.



[Watch Video Solution](#)

10. What does RCGM stand for?

What its function.



Watch Video Solution

11. What are the steps taken to sterilize the culture room in plant tissue culture?



Watch Video Solution

12. Write the various steps involved in cell suspension culture.



Watch Video Solution

13. What do you mean by Embryoids? Write its application.



Watch Video Solution

14. Give an account on cryopreservation.



Watch Video Solution

15. Mention two potential risks involved in Biosafety.



Watch Video Solution

16. What is GEAC?.

Mention its role.



Watch Video Solution

17. What do you mean by Germplasm conservation? Describe it.



Watch Video Solution

18. List out the organizations that have implemented the biosafety guidelines.



Watch Video Solution

19. You are given a shoot tip. How will you culture it into a plant?



[Watch Video Solution](#)

20. Totipotency refers to

- A. Capacity to generate genetically identical plants.
- B. Capacity to generate a whole plant from any plant cell/explant.

- C. Capacity to generate hybrid protoplasts
- D. Recovery of healthy plants from diseased plants.

Answer:



Watch Video Solution

21. Micro propagation involves

- A. Vegetative multiplication of plants by using micro-organisms.

B. Vegetative multiplication of plants by using small explants.

C. Vegetative multiplication of plants by using microspores.

D. Non-vegetative multiplication of plants by using microspores and megaspores.

Answer:



Watch Video Solution

22. Match the following:

Column A	Column B
1) Totipotency	A) Reversion of mature cells into meristem

2) Dedifferentiation	B) Biochemical and structural changes of cells
3) Explant	C) Properties of living cells develops into entire plant
4) Differentiation	D) Selected plant tissue transferred to culture medium

A. 1-C 2-A 3-D 4-B

B. 1-A 2-C 3-B 4-D

C. 1-B 2-A 3-D 4-C

D. 1-D 2-B 3-C 4-A

Answer:



Watch Video Solution

23. The time duration for sterilization process by using autoclave is _____ minutes and the temperature is _____

A. 10 to 30 minutes and $125^{\circ} C$

B. 15 to 30 minutes and $121^{\circ}C$

C. 15 to 20 minutes and $125^{\circ}C$

D. 10 to 20 minutes and $121^{\circ}C$

Answer:



Watch Video Solution

24. Which of the following statement is correct?

- A. Agar is not extracted from marine algae such as seaweeds.
- B. Callus undergoes differentiation and produces somatic embryoids
- C. Surface sterilization of explants is done by using mercuric bromide
- D. P^H of the culture medium is 5.0 to 6.0

Answer:



Watch Video Solution

25. Select the incorrect statement from given statement.

- A. A tonic used for cardiac arrest is obtained from *Digitalis purpurea*
- B. Medicine used to treat Rheumatic pain is extracted from *Capsicum annum*
- C. An anti malarial drug is isolated from *Cinchona officinalis*.
- D. Anti-carcinogenic property is not seen in *Cartharanthus roseus*.

Answer:



Watch Video Solution

26. Virus free plants are developed from

- A. Organ culture
- B. Meristem culture
- C. Protoplast culture
- D. Cell suspension culture

Answer:



Watch Video Solution

27. The prevention of large scale loss of biological integrity is

A. Biopatent

B. Bioethics

C. Biosafety

D. Biofuel

Answer:



28. Cryopreservation means it is a process to preserve plant cells, tissues or organs

A. at very low temperature by using ether.

B. at very high temperature by using liquid nitrogen

C. at very low temperature of -196 by using liquid nitrogen

D. at very low temperature by using liquid nitrogen

Answer:



Watch Video Solution

29. Solidifying agent used in plant tissue culture is

A. Nicotinic acid

B. Cobaltous chloride

C. EDTA

D. Agar

Answer:



Watch Video Solution

30. Tissue culture is also known as

A. In vivo growth of cells

B. In vitro growth of cells

C. Coventional method

D. Traditional method

Answer:



Watch Video Solution

31. Who proposed the concept of Totipotency?

A. Gottlieb Haberlandt

B. Martin

C. P.R. White

D. F.C. Steward

Answer:



Watch Video Solution

32. The intergeneric hybrid plant pomato was developed by.

A. Guha

B. Maheshwari

C. Chilton

D. Melchers

Answer:



Watch Video Solution

33. Identify the wrongly matched pair

A. F.C. Steward-Use of coconut water in tissue culture.

B. P.R. White-Root culture

C. Morel and Martin-Test tube fertilization

D. Chilton-Transformed tobacco from single cell transformation

Answer:



Watch Video Solution

34. Virus free Dahlia and potato plants are developed by.

A. Horsch

B. Morel and Martin

C. P.R. White

D. Yamada

Answer:



Watch Video Solution

35. In vitro production of haploid embryos from anther of *Datura* was developed by.

A. Haberlandt

B. Guha and Maheshwari

C. Vasil

D. Hildebrandt

Answer:



Watch Video Solution

36. Which of the following was produced by Kanta et al in 1962?

A. Test-tube fertilization in flowering plants

B. Regenerated tobacco plants

C. Formulation of tissue culture medium

D. Root culture

Answer:



Watch Video Solution

37. Tissue culture medium was formulated by.

A. P.R. White

B. Vasil and Hildbrandt

C. Murashige and Skoog

D. Carlson

Answer:



Watch Video Solution

38. Who is called the father of tissue culture?

Why?

A. Bonner

B. Haberlandt

C. Steward

D. Kanta

Answer:



Watch Video Solution

39. Part of plant or tissue used for culturing is called.

A. Scion

B. Explant

C. Stock

D. Callus

Answer:



Watch Video Solution

40. Which of the following is used for the sterilization of culture room?

A. Mercuric chloride

B. Sulphuric acid

C. Nitric acid

D. Sodium hypochlorite

Answer:



Watch Video Solution

41. Which of the following nutrient medium is commonly used for plant tissue culture?

A. MS medium

B. B5 medium

C. White medium

D. Nitsch's medium

Answer:



Watch Video Solution

42. Agar is obtained from

A. Land algae

B. Marine algae

C. Land Lichens

D. Marine Lichens

Answer:



Watch Video Solution

43. The suitable pH of tissue culture medium is

A. 3.6 to 4.0

B. 4.6 to 5.0

C. 5.6 to 6.0

D. 6.6 to 7.0

Answer:



Watch Video Solution

44. The constant temperature for tissue culture.

A. $20^{\circ} C \pm 2^{\circ} C$

B. $25^{\circ} C \pm 2^{\circ} C$

C. $30^{\circ} C \pm 2^{\circ} C$

D. $35^{\circ} C \pm 2^{\circ} C$

Answer:



45. A mass of unorganized growth of plant cells are called.

A. Callus

B. Thallus

C. Plantlet

D. Organ

Answer:



46. Which one of the following is not a micronutrient?

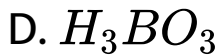
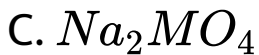
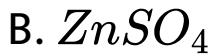
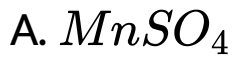
- A. Zinc sulphate
- B. Ammonium nitrate
- C. Potassium nitrate
- D. Calcium chloride

Answer:



Watch Video Solution

47. Identify the minor nutrient found in MS medium?



Answer:



Watch Video Solution

48. Match the following:

- | | |
|------------|---------------------|
| 1. Callus | - A. Growth hormone |
| 2. PEG | - B. Iron stock |
| 3. NaEDTA | - C. Fusogen |
| 4. Kinetin | - D. Mass of cells |

A. 1-B, 2-D, 3-A, 4-C

B. 1-D, 2-C, 3-A, 4-B

C. 1-D, 2-C, 3-B, 4-A

D. 1-C, 2-A, 3-D, 4-B

Answer:



Watch Video Solution

49. The plant cell walls are digested by.

- A. Protein mixtures
- B. Vitamin mixtures
- C. Enzyme mixtures
- D. Hormonal mixtures

Answer:



Watch Video Solution

50. The isolated protoplasts are transferred to.....solution to retain their viability.

A. Ethanol

B. Sucrose

C. Agar

D. Mannitol

Answer:



Watch Video Solution

51. The first step in protoplast culture is

A. Fusion of protoplast

B. Culture of protoplasts

C. Selection of somatic hybrid cells

D. Isolation of protoplast

Answer:



Watch Video Solution

52. The fused protoplast viability is tested with.

A. Fluorescein diacetate

B. Sucrose solution

C. Polyethylene Glycol

D. Phenolic compound

Answer:



Watch Video Solution

53. Fusion product of protoplast without nucleus _____.

A. Hybrid

B. Cybrid

C. Callus

D. Thallus

Answer:



Watch Video Solution

54. Which of the following is isolated from *Catharanthus roseus*?

A. Capsaicin

B. Digoxin

C. Indole alkaloid

D. Quinine

Answer:



Watch Video Solution

55. Match the following and select the correct option.

- | | | |
|----------------|---|-----------------------------|
| 1. Digoxin | - | A. Rheumatic pain treatment |
| 2. Codeine | - | B. Anti carcinogenic |
| 3. Capsaicin | - | C. Cardiac tonic |
| 4. Vincristine | - | D. Analgesic |

A. 1-C, 2-D, 3-A, 4-B

B. 1-D, 2-A, 3-B, 4-C

C. 1-B, 2-D, 3-A, 4-C

D. 1-C, 2-B, 3-A, 4-D

Answer:





[Watch Video Solution](#)

56. Which one is not a secondary metabolite?

- A. Alkaloid
- B. Phenolic compound
- C. Citric acid
- D. Codeine

Answer:



[Watch Video Solution](#)

57. The ability of the component cells to callus to form a whole plant is known as

- A. Redifferentiation
- B. Dedifferentiation
- C. Differentiation
- D. None of these

Answer:



Watch Video Solution

58. Which of the following plant cell will show totipotency?

- A. Xylem vessels
- B. Phloem vessels
- C. Meristem
- D. Sieve tubes

Answer:



Watch Video Solution

59. The plant source of codeine is

- A. *Digitalis purpurea*
- B. *Papaver somniferum*
- C. *Capsicum annum*
- D. *Catharanthus roseus*

Answer:



Watch Video Solution

60. Which of the following is always free from viruses?

A. Shoot meristem tip

B. Root meristem tip

C. Central meristem

D. Peripheral meristem

Answer:



Watch Video Solution

61. The temperature of cryopreservation is.

A. (-) $180^{\circ} C$

B. (-) $185^{\circ} C$

C. (-) $196^{\circ} C$

D. (-) $200^{\circ} C$

Answer:



Watch Video Solution

62. Match the following and select the correct option.

- | | |
|------------------------|------------------------|
| 1. Dimethyl sulphoxide | - A. Growth hormone |
| 2. Myo- inositol | - B. Minor nutrient |
| 3. Cobaltous chloride | - C. Solidifying agent |
| 4. Agar | - D. Cryoprotectant |

A. 1-C, 2-B, 3-D, 4-A

B. 1-D, 2-A, 3-B, 4-C

C. 1-B, 2-D, 3-C, 4-A

D. 1-D, 2-C, 3-B, 4-A

Answer:



Watch Video Solution

63. Which of the following statement is correct?

A. Somaclonal variations found in gametes

B. Shoot meristem tip culture is the method to produce virus-free plants

C. Protective agents are added after cryopreservation

D. Cell suspension culture can be useful for the production of primary metabolites

Answer:



Watch Video Solution

64. Identify the correct order

In vitro culture

Organogenesis

Apical meristem

Cultures are maintained at $24 \pm 1^\circ C$

A. ii, I, iv, iii,

B. iv, ii, ii, i

C. iii, I, iv, ii

D. iii, iv, ii, I

Answer:



Watch Video Solution

65. The term 'intellectual property Right' covers

- A. Copyright
- B. Trademark
- C. Trade secrets
- D. all of the above

Answer:



Watch Video Solution

66. Which of the following is a signed document?

A. The claim

B. The great

C. The specification

D. None of the above

Answer:



Watch Video Solution

67. The prevention of large scale loss of biological integrity is

A. Biosafety

B. Bioethics

C. Patent

D. Specification

Answer:



Watch Video Solution

68. Which of the following monitors the risky research activities in the laboratories?

A. GEAC

B. RCGM

C. IBSC

D. DBT

Answer:



Watch Video Solution

69. Which of the following monitors the risky research activities in the laboratories?

A. IPR

B. GEAC

C. IBSC

D. RCGM

Answer:



Watch Video Solution

70. Which of the following is the main effect of cytokines in the tissue culture system?

- A. Adventitious shoot formation
- B. Induction of somatic embryos
- C. Adventitious root formation
- D. Shoot elongation

Answer:



Watch Video Solution

71. The embryo developed from the callus is called.

A. Cybrid

B. Hybrid

C. Embyoid

D. Plantler

Answer:



Watch Video Solution

72. The time duration for the protoplast to synthesis new cell wall is.

A. 12-24 hours

B. 24-48 hours

C. 3-4 days

D. 5-7 days

Answer:



Watch Video Solution

73. In protoplast culture, the first division of new cells occurs between.....

A. 2 – 3

B. 2 – 4

C. 2 – 6

D. 2 – 7

Answer:



Watch Video Solution

74. The growing of cells in vitro in liquid medium is known as

- A. Protoplast culture
- B. Cell suspension culture
- C. Organ culture
- D. Meristem culture

Answer:



Watch Video Solution

75. The plant source of digoxin is

- A. *Digitalis purpurea*
- B. *Papaver somniferum*
- C. *Capsicum annum*
- D. *Catharanthus roseus*

Answer:



Watch Video Solution

76. The composition of Ammonium nitrate in MS medium is.

A. 1900.0mg/l

B. 440.0mg/l

C. 1650.0mg/l

D. 370.0mg/l

Answer:



Watch Video Solution

77. Identify the correct order

Embryo

Explant in nutrient medium

Callus

Plantlet

A. iv, ii, iii, I

B. ii, iii, I, iv

C. ii, iv, iii, I

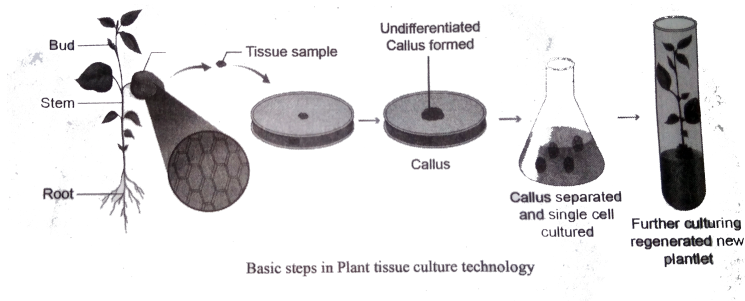
D. iii, I, ii, iv

Answer:



Example

1. What is the name of the process given below? Write its 4 types.



2. How will you avoid the growing of microbes in nutrient medium during culture process?

What are the techniques used to remove the microbes?



Watch Video Solution

3. Write the various steps involved in cell suspension culture.



Watch Video Solution

4. What do you mean by Embryoids? Write its application.



Watch Video Solution

5. Explain the basic concepts involved in plant tissue culture.



Watch Video Solution

6. Give an account on cryopreservation.





[Watch Video Solution](#)

7. What do you mean by Germplasm conservation? Describe it.



[Watch Video Solution](#)

8. Write the protocol for artificial seed preparation.



[Watch Video Solution](#)

9. Based on the material used, how will you classify the culture technology?



[Watch Video Solution](#)

10. HEPA stand for

- A. High Efficiency Particulate Air
- B. High Effective Parts of Air remover
- C. High Effective Particles of Air
- D. High Efficiency Particle Air

Answer:



Watch Video Solution

11. Define plant tissue culture.



Watch Video Solution

12. Write the steps to sterilize the explants in plant tissue culture?



Watch Video Solution

13. What are the steps taken to sterilize the culture room in plant tissue culture?



Watch Video Solution

14. Define tissue culture.



Watch Video Solution

15. What does in vitro mean?



 [Watch Video Solution](#)

16. Who is called the father of tissue culture?

Why?



[Watch Video Solution](#)

17. What is pomato?



[Watch Video Solution](#)

18. List out the three fundamental principles of plant tissue culture.



Watch Video Solution

19. What is an agar?



Watch Video Solution

20. What is a callus?



Watch Video Solution

21. Write about the culture conditions to be maintained in plant tissue culture.



Watch Video Solution

22. What is hardening?



Watch Video Solution

23. Point out the factors that determine success rate of tissue culturing.



Watch Video Solution

24. Name the culture medium commonly used for tissue culture.



Watch Video Solution

25. List out the media available for plant tissue culture and their contribution.



Watch Video Solution

26. Give examples of secondary metabolites in plants.



Watch Video Solution

27. Define secondary metabolites.



Watch Video Solution

28. Define somaclonal variations.



Watch Video Solution

29. Define gametoclonal variations.



Watch Video Solution

30. Write a note on hardening technique in plant tissue culture.



Watch Video Solution

31. What is chemically defined medium?



Watch Video Solution

32. Comment on cybrid.



Watch Video Solution

33. How will you remove the microbes from nutrient medium?



Watch Video Solution

34. List out the organizations that have implemented the biosafety guidelines.



Watch Video Solution

35. Expand IBC's and mention its function.



Watch Video Solution

36. What does RCGM stand for?

What its function.



Watch Video Solution

37. What is GEAC?.

Mention its role.



[Watch Video Solution](#)

38. Describe the sterilization technique to maintain aseptic environment in plant tissue culture.



[Watch Video Solution](#)

39. Write a note on patents.



[Watch Video Solution](#)

40. Draw the flow chart of general steps in patenting.



Watch Video Solution

41. What is ELSI?



Watch Video Solution

42. List out the impact of biotechnology in our future.





[Watch Video Solution](#)

43. Define protoplast culture



[Watch Video Solution](#)

44. How will you get pure protoplast?



[Watch Video Solution](#)

45. (a) Explain the steps involved in protoplast culture.



Watch Video Solution

46. Give the diagrammatic representation of protoplast culture.



Watch Video Solution

47. Highlight the protocol for production of virus free meristem tip culture.



Watch Video Solution

48. List out the uses of in vitro growth of tissues.



Watch Video Solution

49. Who gave law of inheritance?



Watch Video Solution

50. What are the laboratory facilities needed for the plant tissue culture?



Watch Video Solution

51. What is organogenesis?



Watch Video Solution

52. Write the application of plant tissue culture.



Watch Video Solution

53. List out the steps involved in induction of callus.



Watch Video Solution

54. How virus free plants are developed?



[Watch Video Solution](#)

55. Mention two potential risks involved in Biosafety.



[Watch Video Solution](#)

56. Write a short note on biosafety.



[Watch Video Solution](#)

57. List out the ethical issues of genomic research.



Watch Video Solution

58. What is GEAC?.

Mention its role.



Watch Video Solution

59. What is bioethics ?



Watch Video Solution

60. Explain in detail about IPR.



Watch Video Solution

61. Write the advantages of artificial seeds.



Watch Video Solution

62. Name and Explain the type of tissue culture which uses plant organs on culture media.



Watch Video Solution

63. You are given a shoot tip. How will you culture it into a plant?



Watch Video Solution

64. How will you raise banana from suckers?

Give a protocol.



Watch Video Solution

65. Draw the flow chart for indirect embryogenesis.



Watch Video Solution

66. Why do we add dimethyl sulphoxide, glycerol or sucrose before cryopreservation?



Watch Video Solution

67. Define germplasm collection.



Watch Video Solution

68. By using gene manipulation research we produce varieties of organisms. What is the

need of biosafety in it?



Watch Video Solution

69. How to remove cell wall of plant cell?



Watch Video Solution