

BIOLOGY

BOOKS - SURA BIOLOGY (TAMIL ENGLISH)

PLANT TISSUE CULTURE

Evaluation Choose The Correct Answer From The Given Option

- 1. 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: A::B::C



was all wilder collection

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2. Micro propagation involves
A. vegetative multiplication of plants by using micro-organisms.
B. vegetative multiplication of plants by using samll explants.
C. vegetative multiplication of plants by using microspores.
D. Non - vegetative multiplication of plants by using microspores and
megaspores.
Answer: A::B::C
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3. The time duration for sterilization process by using autoclave is _____

minutes and the temperature is _____

A. 10 to 30 minutes and 125° C

- B. 15 to 30 minutes and 121° C
- C. 15 to 20 minutes and $125\,^{\circ}\,\mathrm{C}$
- D. 10 to 20 minutes and $121\,^{\circ}\,\mathrm{C}$

Answer: A::B::C::D



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- 4. 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 $5.0 \mathrm{to}~6.0$

Answer: A::B::C::D



5. 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: A::C::D **Watch Video Solution** 6. Virus free plants are developed from A. Organ culture B. Meristem culture C. Protoplast culture

D. Cell suspension culture
Answer: B::C
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7. The prevention of large scale loss of biological integrity
A. Biopatent
B. Bioethics
C. Biosafety
D. Biofuel
Answer: A::B::C
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8. 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: A::B::C::D

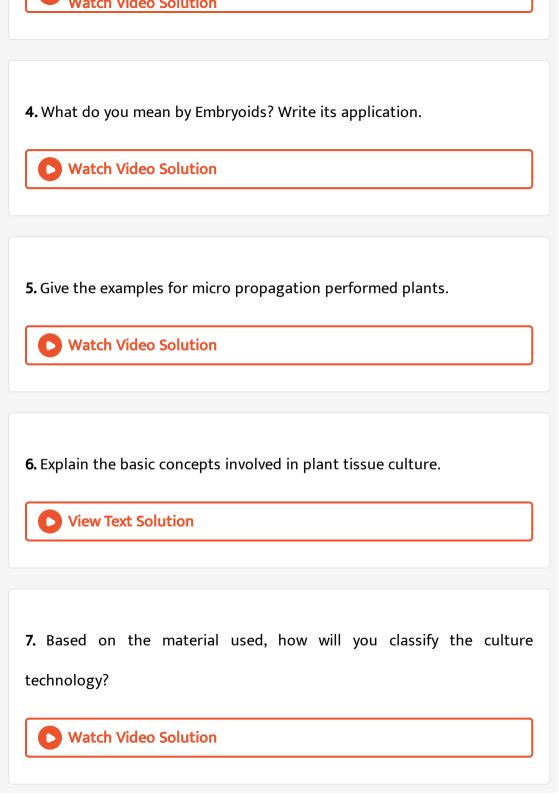


- 9. Solidifying agent used in plant tissue culture is
 - A. Nicotinic acid
 - B. Cobaltous chloride
 - C. EDTA
 - D. Agar

Answer: A::D Watch Video Solution **Evaluation** 1. What is the name of the process given below? Write its 4 types. **View Text Solution** 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.





8. What is Cryopreservation?
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9. What do you mean by Germplasm conservation? Describe it.
Watch Video Solution
10. Write the protocol for artificial seed preparation.
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Additional Questions And Answers Choose The Correct Answer
1. Who proposed the concept of Totipotency?
A. Karl Ereky

B. Gottlieb Haberlandt C. Edward Jenner D. Ernst Hoppe Answer: A::B::D **Watch Video Solution** 2. Name the phenomenon of the reversion of mature cells to the meristematic state. A. Redifferentiation B. Dedifferentiation C. Totipotency D. Differentiation Answer: A::B::D **Watch Video Solution**

3. Artificial seeds are also called as A. synthetic seeds B. fibre seeds C. mature seeds D. Golden seeds Answer: A::C::D **Watch Video Solution** 4. Steam sterilization is done by autoclaving at A. $120^{\circ}\,C$ B. 121° C $\mathsf{C}.\,115^{\circ}\,\mathsf{C}$ D. 151° C

Answer: A::B::C



- 5. Explant of _____ sterile segment is selected from leaf for tissue culture.
 - A. $1 3 \, \text{cm}$
 - B. 1 2 cm
 - C.1 1.5 cm
 - D. 1 4 cm

Answer: A::B::C



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6. The embryoids are sub-cultured to produce _____.

A. plantlets B. leaf C. stem D. root Answer: A **Watch Video Solution** 7. The plant extracts are sterilized by passing through millipore filter with A. $0.22~\mathrm{mm}$ pore diameter $\mathsf{B.}\,0.4\,\mathsf{mm}$ pore diameter $\mathsf{C.}\ 0.2\ \mathsf{mm}\ \mathsf{pore}\ \mathsf{diameter}$ D. `0.3 mm pore diameter Answer: A::B::D

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8.	Codeine	is	got	from	

- A. Catharanthus
- B. Papaver
- C. Digitalis
- D. Cinchona

Answer: A::B



- **9.** Shoot meristem tip culture is used to obtain virus-free plants because
- A. shoot tip is got easily
 - B. shoot tip grows faster
 - C. shoot tip has the Apical bud

D. shoot meristem tip is always virus free
Answer: A::D
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10. Dimethyl sulphoxide is added during cryopreservation because it
A. reduces the temperature.
B. helps in enzymatic activities.
C. protects tissues from stress of freezing.
D. maintains tissues in dormant condition.
Answer: C
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11 is a cryoprotectant.

A. glycerol
B. sodium alginate
C. macerozyme
D. MS medium
Answer: A::C
Watch Video Solution
12. Vincristine is used as
A. analgesic
B. cardiac tonic
C. anti carcinogenic substance
D. Rheumatic pain reliever
Answer: A::B::C
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Additional Questions And Answers Choose The Correct Statements

1	Plan	t tic	۵۱۱۵	cul:	tura
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- (I) Used to describe the plant part in in-vitro
- (II) Used to describe the growth of any plant part.
- (III) Plant part explant must be selected for this procedure.
- (IV) Growth can be done in culture medium
 - A. III and IV only
 - B. I, III and IV only
 - C. I, II and IV only
 - D. All of the above

Answer: A::D

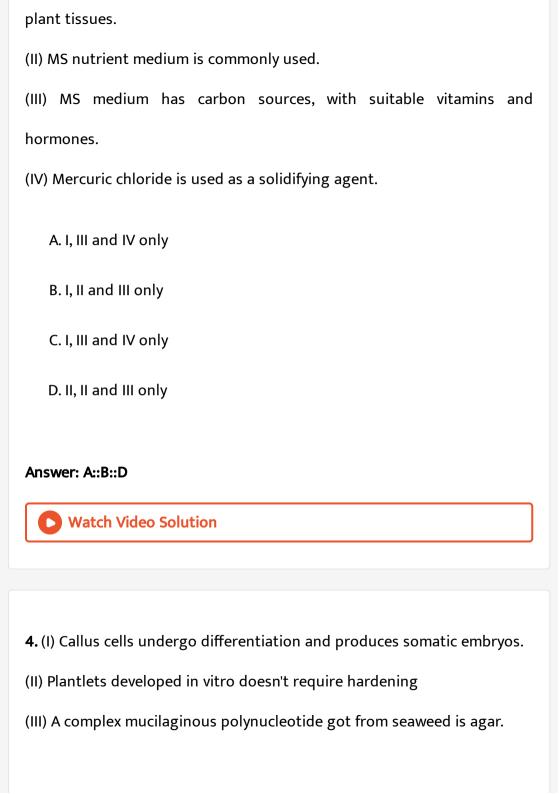


- 2. "Sterilization of culture room"
- (I) Floor and walls are washed with detergent
- (II) Used $5\,\%\,$ sodium chloride or $90\,\%\,$ ethanol for washing.
- (III) The cabinet of laminar airflow is sterilized by clearing the work surface with $95\,\%$ ethanol.
- (IV) Exposure of UV radiation for 15 minutes.
 - A. II, III and IV only
 - B. I and IV only
 - C. I, II and IV only
 - D. I, III and IV only

Answer: A::D



- 3. "Media preparation"
- (I) No single medium is capable of maintaining optimum growth of all



A. I and II only B. I only C. III and IV only D. I and IV only **Answer: B** Watch Video Solution 5. (I) Secondary metabolites are "by products" of cell metabolism. (II) Production of secondary metabolites can be automated using bioreactors. (III) Fusion product of protoplast with nucleus of different cells are cybrid. (IV) Polyethylene glycol is used as growth agent in tissue culture. A. I and II only B. III only C. III and IV only

D. I and IV only

Answer: A::D



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Additional Questions And Answers Choose The Incorrect Statements

1. (I) Plant tissue culture is used in clonal propagation

(II) The culture room can be sterilized by autoclaving

- (III) MS medium is the commonly used nutrient medium.
- (IV) B5 medium is also called Nitsch medium.
- A. I and IV only
 - B. II and IV only
 - C. I and III only
 - D. III and IV only

Answer: A::B::D

- **2.** (I) PEG is a secondary metabolite.
- (II) Cells are agitated in a shaker in cell suspension culture.
- (III) Micropropagation is applicable to pineapple and potato.
- (IV) Somatic embryoids can be used for production of synthetic seed.
 - A. I only
 - B. II and III only
 - C. IV only
 - D. I and IV only

Answer: A



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3. I) Germplasm conservation refers to the conservation of non-living genetic resources like pollen, seeds etc.

(III) Digoxin is used for Rheumatic pain treatment (IV) Induction of shoots in suckers of banana occurs within 168 days. A. IV only B. I, II and III only C. II and III only D. I only Answer: A **Watch Video Solution** Additional Questions And Answers Assertion And Reason 1. Assertion (A): Tissue culture techniques are used for commercial production of plants. Reason (R): Tissue culture techniques are used for plant research.

(II) Coconut water affects tissue culture media.

- A. Assertion is true and Reason is correct explanation of Assertion.
 - B. Assertion and Reason is true but Reason is not correct explanation of Assertion.
 - C. Both Assertion and Reason are true.
 - D. Both Assertion and Reason are false.

Answer: A::B::D



- 2. Assertion (A): Explant is got from a plant and isolated.
- Reason (R): It is maintaned in controlled condition.
 - A. Assertion is true and Reason is correct explanation of Assertion.
 - B. Assertion and Reason is true but Reason is not correct explanation of Assertion.
 - C. Both Assertion and Reason are true.

D. Both Assertion and Reason are false.

Answer: A::B::C::D



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3. Assertion (A): Tissue culture is practiced with plant cells.

Reason (R): Animal cells do not show totipotency.

A. Assertion is true and Reason is correct explanation of Assertion.

B. Assertion and Reason is true but Reason is not correct explanation of Assertion.

C. Both Assertion and Reason are true.

D. Both Assertion and Reason are false.

Answer: A::C::D



4. Assertion (A): Different kinds of nutrient media are available for tissue culture.

Reason (R): Generally MS medium is preferred over other media.

A. Assertion is true and Reason is correct explanation of Assertion.

B. Assertion and Reason is true but Reason is not correct explanation of Assertion.

C. Both Assertion and Reason are true.

D. Both Assertion and Reason are false.

Answer: A::C::D



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5. Assertion (A): Banana is propagated by micropropagation.

Reason (R): Banana does not produce seeds suitable for propagation.

A. Assertion is true and Reason is correct explanation of Assertion.

- B. Assertion and Reason is true but Reason is not correct explanation of Assertion.
- C. Both Assertion and Reason are true.
- D. Both Assertion and Reason are false.

Answer: A::C::D



- 6. Assertion (A): A person who invents a product must patent it.
- Reason (R): Others can start using his invention.
 - A. Assertion is true and Reason is correct explanation of Assertion.
 - B. Assertion and Reason is true but Reason is not correct explanation
 - of Assertion.
 - C. Both Assertion and Reason are true.
 - D. Both Assertion and Reason are false.

Answer: A::C::D



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Additional Questions And Answers Choose The Correct Pair

- (a) Cybrid fusion of cytoplasm
- (b) Agar Differentiation
- (c) Callus Marine algae
- (d) Rheumatic pain Digitalis purpuria
- Watch Video Solution

- (a) Synthetic seeds Artificial seeds
- (b) Indole alkaloids Antimalarial
- (c) Catharanthus roseus Cardiac tonic
- (d) Quinine Primary metabolite
- Watch Video Solution

- (a) Somaclonal Gametes
- variations
- (b) Artificial seeds Primary metabolites

Heat tolerant plants

metabolites

3. (c) secondary

- (d) Gametoclonal Gametophytes variations
- Watch Video Solution

Additional Questions And Answers Choose The Incorrect Pair

- (a) Melchers Intergenic hybrid
- (b) Chilton Transformed tobacco plant
- (c) Murashige Nutrient media
- (d) Maheshwari Coconut water in tissue culture



	(a)	Totipotency	_	Gottlieb
	` ,			Haberlandt
	(b)	Differentiation	_	Structural changes
2.	()			of cell
	(c)	Redifferentiation	_	Explant
	(d)			Formation of callus
	(ω)	2 carrier error action		
	0	Watch Video Solutio	n	
	(a)	Cryopreservation	_	Preservation by
	` ,			cooling
	(b)	Protective agents	_	Dimethyl
3.	` '	J		sulphoxide
	(c)	Organogenesis	_	Cell culture
	(d)		_	Allium sativum
	(4)	embryogenesis		
		cinory ogenesis		
	0	Watch Video Solutio	n	
L				
4.	Cho	oose the incorrect pa	ir.	
(1	a)	Roots	_	Rhizogenesis
	•	Shoots	_	Caulogenesis
		Artificial seed	_	Strawberry
		Micropropagation	_	Banana
(<i>w j</i>	witer opt opagation	_	Denome

R

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Additional Questions And Answers Answer In One Word
1. Growing of plant tissue in artificial media
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2. Who proposed the concept of totipotency / Father of Tissue culture
Watch Video Solution
3. A property of plant cells enabling it to produce a entire plant from a tissue
Watch Video Solution

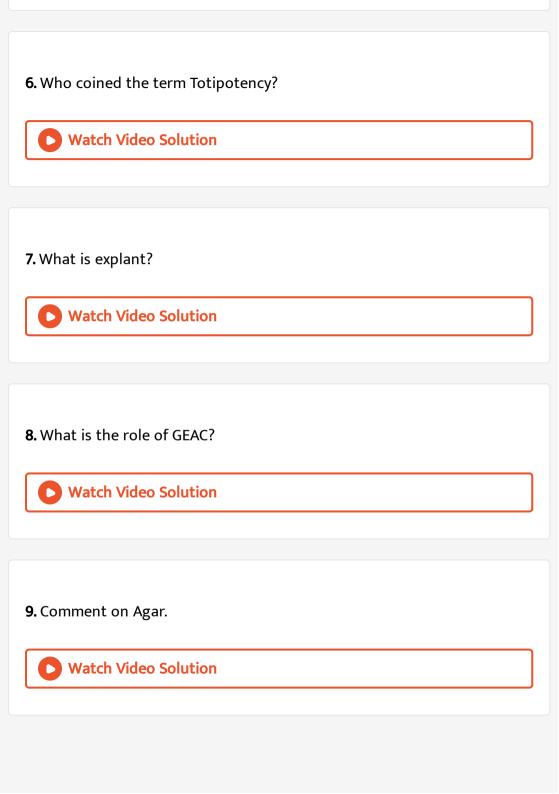
4. Phenomenon by which callus forms a whole plant
Watch Video Solution
5. Gelling agent used in tissue culture medium
Watch Video Solution
6. Unorganized mass of cells obtained in in vitro culture
medium
Watch Video Solution
7. Process by which plantlets in tissue culture are gradually exposed to
normal field condition
Watch Video Solution
Water video Solution

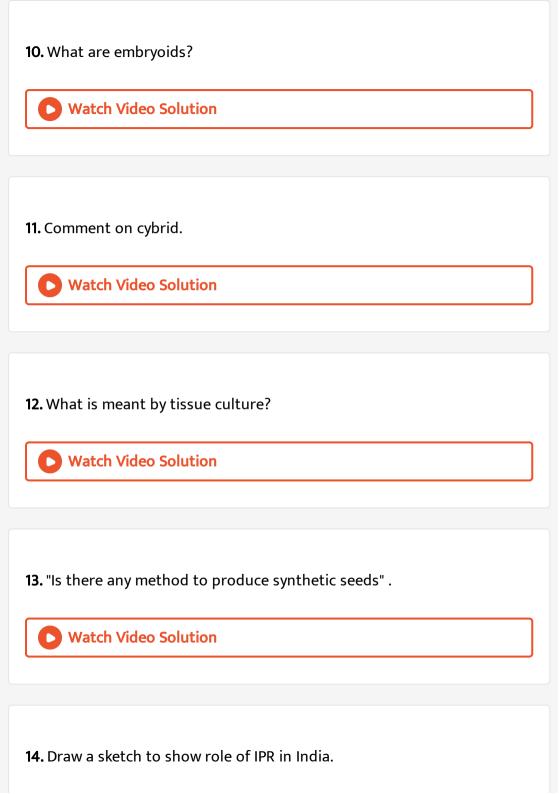
8. An example of a fusogen used in tissue culture
Watch Video Solution
9. Fusion product of protoplast without nucleus
Watch Video Solution
10. Chemical substances produced as byproducts of cell metabolism
·
Watch Video Solution
11. An analgesic got from Papaver sominiferum
Watch Video Solution

12. An anti-carcinogenic substance got from Catharanthus species
·
Watch Video Solution
13. Product got by encapsulation of embryoids in agarose gel
Watch Video Solution
14. Somatic variations found in plants regenerated in vitro
Watch Video Solution
15. Type of tissue culture used to produce virus free plants
Watch Video Solution

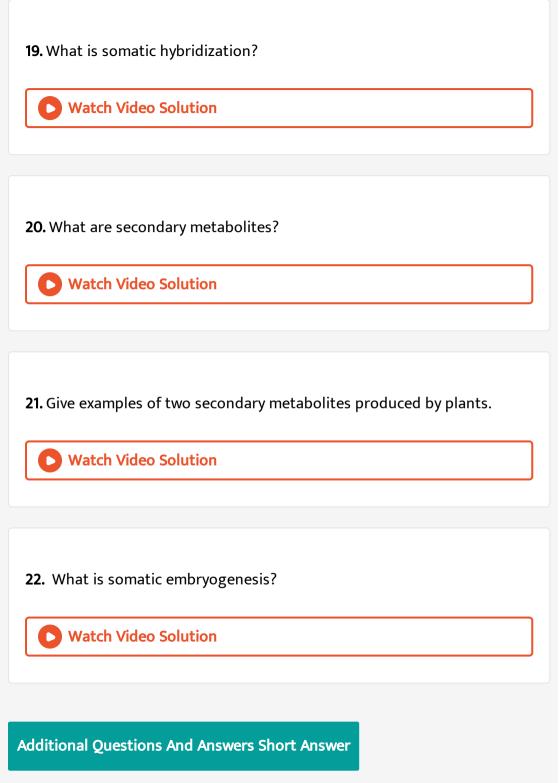
16. Protective agents used in cryopreservation
Watch Video Solution
17. Preservation of protoplasts / cells by cooling at very low temperature
Watch Video Solution
18. A special right granted to the discoverer or inventor of a product by the government
Watch Video Solution
Additional Questions And Answers Very Short Answer
1. What is redifferentiation?

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2. Mention the media formulation available for plant tissue culture other than MS.
Watch Video Solution
3. How is aeration done in culture medium?
Watch Video Solution
4. Why is a sterile environment important in tissue culture?
Watch Video Solution
5. What is meant by Totipotency?
Watch Video Solution





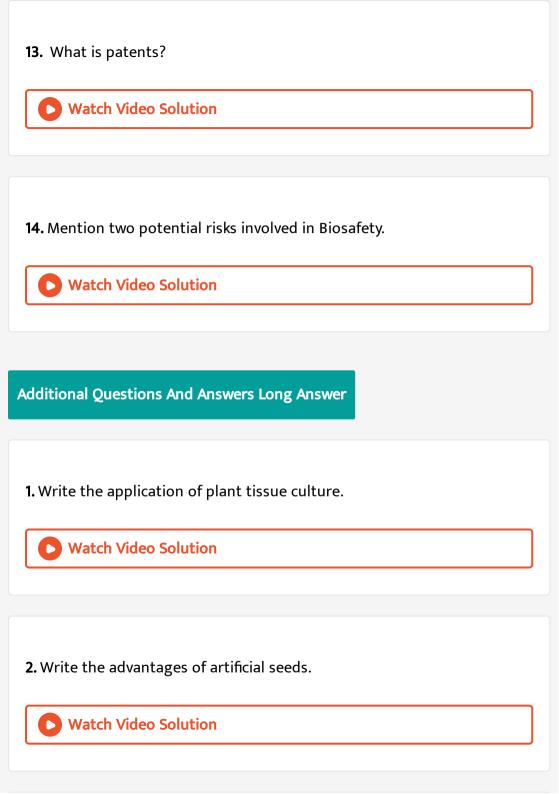
Watch Video Solution
15. Differentiate Organ culture and Meristem culture.
Watch Video Solution
16. Why is MS media used in plant tissue culture?
Watch Video Solution
17. What is Dedifferentiation?
Watch Video Solution
18. What is PEG?
Watch Video Solution

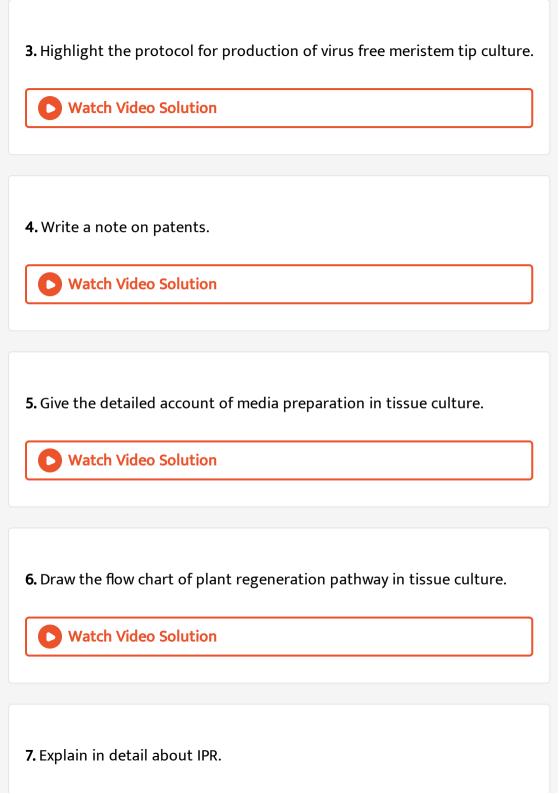


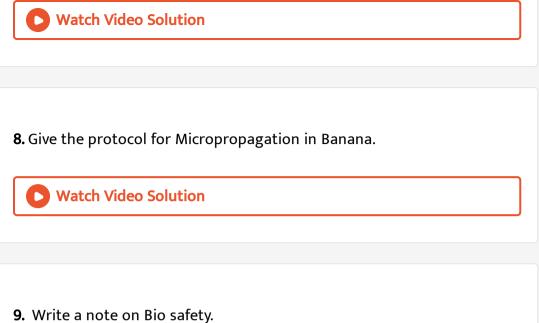
1. Write a note on hardening technique in plant tissue culture.				
Watch Video Solution				
2. What is organogenesis?				
Watch Video Solution				
3. Differentiate between Somaclonal variations and Gametoclonal				
variation.				
Watch Video Solution				
4. Draw the flow chart of general steps in patenting.				
Watch Video Solution				

5. How are synthetic seeds/ artificial seeds produced?					
Watch Video Solution					
6. Explain the Biosafety guidelines are being implemented.					
Watch Video Solution					
7. List the applications of somatic embryogenetics.					
Watch Video Solution					
8. How are synthetic seeds/ artificial seeds produced?					
Watch Video Solution					

9. Why is shoot meristem tip culture method used to obtain virus free
plants?
Watch Video Solution
10. What is Germplasm conservation?
View Text Solution
11. What is Cryopreservation?
Watch Video Solution
12. What is IPR?
Watch Video Solution









Unit Test Choose The Correct Answer

1. 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:



2. Match the following:

- Column I Column II
- 1. Totipotency (A) Reversion of mature cells into meristem
- 2. Dedifferentiation (B) Biochemical and structural changes of cell
- Explant (C) Properties of living cells develops into entire
 Differentiation (D) Selected plant tissue transferred to culture m
- 1 2 3 4 A.
- D.

Answer:

..........

- Watch Video Solution
- **3.** 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 extracted from Capsicum annum.
 - C. An anti malarial drug is isolated from Cinchona officinalis.
 - D. Anticarcinogenic property is not seen in Catharanthus roseus.

Answer:



- **4.** 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:



- 5. Dimethyl sulphoxide is added during cryopreservation because it
 - A. reduces the temperature.
 - B. helps in enzymatic activities.
 - C. protects tissues from stress of freezing.
 - D. maintains tissues in dormant condition.

Answer:



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6. Name the phenomenon of the reversion of mature cells to the meristematic state.					
A. Redifferentiation					
B. Dedifferentiation					
C. Totipotency					
D. Differentiation					
Answer:					
Watch Video Solution					
7. Explant of sterile segment is selected from leaf for tissue					
culture.					
A. $1-3\mathrm{cm}$					
B. $1-2\mathrm{cm}$					

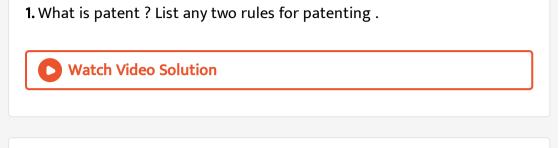
 $\mathrm{C.}\,1-1.5\,\mathrm{cm}$

D	. $1-4\mathrm{cm}$				
Answer:					
C	Watch Video Solution	on			
ı Cl					
	oose the incorrect pa	ır.	Dhigaganaig		
$egin{array}{c} (a) \ (b) \end{array}$	Roots Shoots	_	Rhizogenesis Caulogenesis		
	Artificial seed		Strawberry		
(d)	Micropropagation		Banana		
C	Watch Video Solution	on			
). An	swer in a one word				
Grow	ing of plant tissue in	artific	cial media		
C	Watch Video Solution	on			

10. A complex mucilaginous polysaccharide is obtained from _____

A. sea weeds
B. bacteria
C. bacillus
D. micrococcus
Answer:
Watch Video Solution
Unit Test Very Short Answer
1. What is hardening?
Watch Video Solution
2. What are artificial seeds?
Watch Video Solution

Unit Test Short Answer



2. Write the application of somatic embryo genesis?



Unit Test Long Answer

1. Write a note on Applications of plant tissue culture.

