

B.Sc 3 year

Botany

Paper.... Biotechnology.

Autoclave-

A waste autoclave is a form of solid waste treatment that uses heat, steam and pressure of an industrial autoclave in the processing of waste.

A. TRUE

B. FALSE

C. Can be true or false

D. Can not say

[View Answer](#)

Question 2

Waste autoclaves process waste in?

A. batches

B. continuous-flow

C. Both A and B

D. None of the above

[View Answer](#)

Question 3

In batch processes, saturated steam is pumped into the autoclave at temperatures around?

- A. 80 degree
- B. 100 degree
- C. 125 degree
- D. 160 degree

[View Answer](#)

Question 4

The autoclave process gives a _____ pathogen and virus kill rate.

- A. high
- B. very high
- C. low
- D. very low

[View Answer](#)

Question 5

_____ has developed and built a municipal solid waste treatment plant based on an autoclaves system

- A. Ambiansys
- B. Babcock
- C. Estech
- D. Ecohispanica

[View Answer](#)

Question 6

Autoclaves are used in the medical applications to perform _____

A. Vulcanization

B. Heating

C. Sterilization

D. Cleaning

[View Answer](#)

Question 7

What is the common temperature used in autoclaves?

A. 109 degree

B. 122 degree

C. 135 degree

D. 142 degree

[View Answer](#)

Question 8

Who invented the autoclave?

A. Pasteur

B. Arnold O. Beckman

C. Antonie van Leeuwenhoek

D. Charles Chamberland

[View Answer](#)

Question 9

What is the inner surface of autoclaves made of?

- A. Mild steel
- B. Copper
- C. Stainless steel
- D. Aluminum

[View Answer](#)

Question 10

When designed for sterilizing waste containing mostly liquids, a waste autoclave is known as an Effluent Decontamination System.

- A. Yes
- B. No
- C. Can be yes or no
- D. Can not say

[View Answer](#)

INTRODUCTION OF PLANT TISSUE CULTURE-

. Who is known as the Father of tissue culture?

- (a) Bonner
- (b) Laibach
- (c) Haberlandt
- (d) Gautheret

Sol: (c) Haberlandt.

2. The production of secondary metabolites requires the use of _____.

- (a) Meristem
- (b) Protoplast
- (c) Axillary buds
- (d) Cell suspension

Sol: (d) Cell suspension.

3. The pair of hormones required for a callus to differentiate are _____.

- (a) Ethylene and Auxin
- (b) Auxin and cytokinin
- (c) Auxin and Abscisic acid
- (d) Cytokinin and gibberellin

Sol: (b) Auxin and cytokinin.

4. What is Dimethyl sulfoxide used for?

- (a) A gelling agent
- (b) Cryoprotectant
- (c) Chelating agent
- (d) An Alkylating agent

Sol: (b) Cryoprotectant.

5. The formation of embryoids from the pollen grains in the tissue culture medium is due to _____.

- (a) Organogenesis
- (b) Test tube culture
- (c) Double fertilization
- (d) Cellular totipotency

Sol: (d) Cellular totipotency.

6. Synthetic seeds are produced by the encapsulation of somatic embryos with _____.

- (a) Sodium acetate
- (b) Sodium nitrate
- (c) Sodium chloride
- (d) Sodium alginate

Sol: (d) Sodium alginate.

7. Totipotency refers to _____.

- (a) Development of fruits from flowers in a culture

- (b) Development of an organ from a cell in a culture medium
- (c) Flowering in a culture medium
- (d) All of the above

Sol: (b) Development of an organ from a cell in a culture medium.

8. Which of the following is the main application of embryo culture?

- (a) Clonal propagation
- (b) Production of embryoids
- (c) Induction of somaclonal variations
- (d) Overcoming hybridisation barriers

Sol: (d) Overcoming hybridisation barriers.

9. In tissue culture of parenchyma, mitosis is accelerated in the presence of _____.

- (a) Auxin
- (b) Cytokinin
- (c) Gibberellin
- (d) Both auxin and cytokinin

Sol: (d) Both auxin and cytokinin.

10. In which of the following conditions do the somaclonal variations appear?

- (a) Plants raised in tissue culture
- (b) Plants exposed to gamma rays
- (c) Plants growing in polluted soil or water
- (d) Plants transferred by a recombinant DNA technology.

Sol: (a) Plants raised in tissue culture.

11. Haploid plants can be obtained from_____.

- (a) Anther culture
- (b) Bud culture
- (c) Leaf culture
- (d) Root culture

Sol: (a) Anther culture.

12. In-plant tissue culture, the callus tissues are generated into a complete plantlet by altering the concentration_____.

- (a) Sugars
- (b) Hormones

- (c) Amino Acids
- (d) Vitamins and minerals

Sol: (b) Hormones.

13. Which of the following is cultured to obtain haploid plants?

- (a) Embryo
- (b) Nucleus
- (c) Apical bud
- (d) Entire anther

Sol: (d) Entire anther.

14. Which of the following vectors is used in crop improvement and crop management?

- (a) Agrobacterium
- (b) Plasmid
- (c) Cosmid
- (d) Phasmid

Sol: (a) Agrobacterium.

15. Which of the following growth hormones produces apical dominance?

- (a) Ethylene
- (b) Cytokinin
- (c) Auxin
- (d) Gibberellin

Sol: (c) Auxin.

16. Cybrids are produced by

- (a) The nucleus of one species but cytoplasm from both the parent species
- (b) The fusion of two same nuclei from the same species
- (c) The fusion of two different nuclei from different species
- (d) None of the above

Sol: (a) Nucleus of one species but cytoplasm from both the parent species.

17. Which of the following mediums is composed of chemically defined compounds?

- (a) Natural media
- (b) Artificial media
- (c) Synthetic media
- (d) None of the above

Sol: (c) Synthetic media.

18. Which of the following chemicals are most widely used for protoplast fusion?

- (a) Mannitol
- (b) Polyethylene glycol
- (c) Sorbitol
- (d) Mannol

Sol: (b) Polyethylene glycol.

19. Which of the following plant cells shows totipotency?

- (a) Cork cells
- (b) Meristem
- (c) Sieve tube
- (d) Xylem vessels

Sol: (b) Meristem.

20. What is Callus?

- (a) Tissues that grow to form an embryoid
- (b) An unorganised actively dividing the mass of cells maintained in a culture
- (c) An insoluble carbohydrate
- (d) A tissue that grows from an embryo

Sol: (b) An unorganised actively dividing mass of cells maintained in culture.

CULTURE MEDIA-

Which one of the following is true

- a) Agar has nutrient properties
- b) Chocolate medium is selective medium
- c) Addition of selective substances in a solid medium is called enrichment media
- d) Nutrient broth is basal medium

Correct answer : d) Nutrient broth is basal medium

Agar has no nutrient properties. Chocolate medium is an enriched media. Addition of selective substances in a liquid medium is called enrichment media.

1. Which of the following is a characteristic of beef extract?

- a) product resulting from the digestion of proteinaceous materials
- b) aqueous extract of lean beef tissue

- c) aqueous extract of yeast cells
- d) complex carbohydrate obtained from certain marine algae

[View Answer](#)

Answer: b

Explanation: Beef extract, a complex raw material used as ingredient for preparing bacteriological media is an aqueous extract of lean beef tissue concentrated to a paste.

2. Which of the following is used as a solidifying agent for media?

- a) Beef extract
- b) Peptone
- c) Agar
- d) Yeast extract

[View Answer](#)

Answer: c

Explanation: Agar is used as a solidification agent for media and is not considered a source of nutrient to the bacteria. Agar dissolved in aqueous solutions, gels when the temperature is reduced below 45 degrees Celsius.

3. Which of the following is a rich source of B vitamins?

- a) Peptone
- b) Yeast extract
- c) Beef extract
- d) Agar

[View Answer](#)

Answer: b

Explanation: Yeast extract which is an aqueous extract of yeast cells is a very rich source of the B vitamins and it also contains apart from it organic nitrogen and carbon compounds.

4. The isolation of gonorrhea-causing organism, *Neisseria gonorrhoeae* by the use of certain antibiotics in media is an example of which of the following?

- a) Selective media
- b) Differential media
- c) Enriched media
- d) Assay media

A

5. Nutrient broth, a liquid media contains beef extract and peptone respectively in how much amounts?

- a) 0.2%, 0.4%
- b) 0.1%, 0.6%
- c) 0.3%, 0.5%
- d) 0.7%, 0.3%

C

6. Which of the following instrument is used for sterilizing the media after it has been prepared?

- a) Autoclave
- b) Laminar Air Flow Chamber
- c) Inoculum Needle
- d) Incubator

A

7. Colony formation can be observed in liquid media broth.

- a) True
- b) False

B

8. Which of the following is a Complex media for fungal growth?

- a) Nutrient broth

- b) Luria-Bertani media
- c) Potato Dextrose Agar(PDA) media
- d) Mac Conkey Agar media

C

9. Which of the following are functions of Maintenance Media?

- a) used for assay of vitamins, amino acids
- b) used for determining the bacterial content
- c) used for determining the type of growth produced by bacteria
- d) used for the maintenance of the viability and physiological characteristics

D

10. Which of the following bacteria requires nicotinic acid as a growth factor in their media?

- a) *Proteus vulgaris*
- b) *Nitrosomonas* sp.
- c) *E. coli*
- d) *Leuconostoc mesenteroides*

A

LIQUID SUSPENSION MEDIA-

Question 1 : Which of the following is not true about nurse or conditioned medium?

It is liquid removed from the suspension of fast growing cells

It contains uncharacterized growth factor released by growing cells

It is used in the culture of regenerating protoplast

It is removed aseptically from the culture and is autoclaved before use

Answer : 4

Question 2 : Very high sugar concentration (40-100 g/l) have been used

In specialized secondary metabolite production

To adjust the osmotic potential of the media in short term treatment for regeneration

Both (a) and (b)

None of these

Answer : 3

Question 3 : What is 'nurse' or conditioned medium?

It is the media full of growth factors used for the growth of cells

It is the medium added to nurse the callus culture

Both (a) and (b)

It is the liquid medium removed from the suspension of fast growing cells

Answer : 4

Question 4 : What are the macronutrients used in plant cell culture medium?

N, P, K, S, Na

N, P, K, Ca, Cl

N, P, K, S, Ca

N, P, Ca, Na, Cl

Answer : 3

Question 5 : Neutralized activated charcoal is occasionally added to young regenerating cultures to

Remove toxic phenolics produced by the stressed plant cell

Help to remove plants growth regulators introduced at an earlier stage

Both (1) and (2)

Maintain the pH of the medium

Answer : 3

Question 6 : Which is/are the naturally occurring plant auxins?

Indole acetic acid (IAA)

Naphthalenacetic acid (NAA)

2,4-dichlorophenoxyacetic acid

All of the above

Answer : 1

Question 7 : Which is/are the disadvantage/(s) of using IAA in plant cell culture media?

It is unstable in solution

Gets easily oxidized

Conjugated to inactive form by plant cells

All of the above

Answer : 4

Question 8 : To maintain the pH of the culture

Organic acid such as citric, fumaric, malic and succinic acid is used

Synthetic buffers such as Tris, MES or HEPS are used

Both (1) and (2)

Ammonium salts are used

Answer : 3

Question 9 : Which of the following is not a cytokinin?

2,4-dichlorophenoxyacetic acid

6 benzylaminopurine

Zeatin

Kinetin

Answer : 1

Question 10 : Which of the following is not an auxin?

Indole acetic acid (IAA)

Naphthalenacetic acid (NAA)

Zeatin

Indole butyric acid

Answer : 3

Question 11 : Which of the following growth regulator is used to stimulate embryo or shoot development?

Auxins

Cytokinins

Gibberellins

Brassinosteroids

Answer : 3

Question 12 : Which of the following growth regulator cause plant cells to grow?

Auxins

Cytokinins

Gibberellins

Brassinosteroids

Answer : 1

Question 13 : Silver thiosulphate is added to culture medium as it helps to

Maintain the pH

Remove toxic phenolics from plant cells

Prevent the gaseous plant hormone, ethylene dioxide from accumulating to detrimental condition.

All of the above

Answer : 3

Question 14 : In plant cell culture media, auxins and cytokinins are used in the range of

1-50 μ M

50-100 μ M

100-125 μ M

More than 125 μ M

Answer : 1

Question 15 : Concentration of sucrose generally used in plant cell culture media is

10-15 g/l

20-30 g/l

40-50 g/l

60-70 g/l

Answer : 2

Question 16 : Which is the most common carbon source used in the plant cell culture media?

Sucrose

Glucose

Fructose

Maltose

Answer : 1

Question 17 : Which of the following is an ethylene biosynthesis inhibitor?

Citric acid

Succinic acid

Activated charcoal

Silver thiosulphate

Answer : 4

Question 18 : Nitrogen in the plant cell culture media is provided by either ammonia or nitrate salt. In the media

Utilization of ammonium cause culture pH to drop while utilization of nitrate cause culture pH to rise

Utilization of nitrate cause culture pH to drop while utilization of ammonium cause culture pH to rise

Utilization of both ammonium and nitrate result in rise in pH

Utilization of both ammonium and nitrate result in drop in pH

Answer : 1

Question 19 : Which of the following growth regulator is added for short initiation during plant regeneration from callus?

Auxins

Cytokinins

Gibberellins

Brassinosteroids

Answer : 2

Question 20 : Which of the following growth regulator promote cell division?

Auxins

Cytokinins

Gibberellins

Brassinosteroids

Answer : 2

Question 1.

Somaclonal variation appears in

(a) Organisms produced through somatic hybridization

(b) Plants growing in highly polluted conditions

© Apomictic plants

(d) Tissue culture raised plants

Answer

Answer: (d) Tissue culture raised plants

Question 2.

Which of the following is not properly matched?

(a) Explant – excised plant part used for callus formation

(b) Cytokinins – root initiation in callus

© Somatic embryo – embryo produced from a vegetative cell

(d) Callus – undifferentiated mass of cells

Answer b

Question 3.

Somatic hybrids are produced by

- (a) Protoplast fusion
- (b) Tissue culture
- © Pollen culture
- (d) Hybridoma process

Answer a

Question 4.

Capacity of a cell to grow into a full individual plant is known as

- (a) Tissue culture
- (b) Clone
- © Vegetative reproduction
- (d) Totipotency

Answer d

Question 5.

In callus culture, roots can be induced by the supply of

- (a) Auxin
- (b) Cytokinin
- © Gibberellin
- (d) Ethylene

Answer a

Question 6.

The technique of obtaining large number of plantlets by tissue culture method is called :

- (a) Organ culture
- (b) Micropropagation

© Macropropagation

(d) Plantlet culture

Answer b

Question 7.

In tissue culture medium, the embryoids formed from pollen grains is due to

(a) Cellular totipotency

(b) Organogenesis

© Double fertilization

(d) Test tube culture

Answer a

Question 8.

Haploid plantlets can be produced by

(a) Pollen culture

(b) Cotyledon culture

© Embryo culture

(d) Meristem culture

Answer a

Question 9.

A major application of embryo culture is

(a) Production of embryoids

(b) Over coming hybridisation barriers

© Induction of somaclonal variations

(d) Clonal propagation

Answer b

Question 10.

Who gave the idea that every plant cell is totipotent

- (a) P.R. White
- (b) E.C. Cocking
- © F.C. Steward
- (d) G. Haberlandt

Answer d

Question 11.

In order to obtain disease free plants through tissue culture techniques the best method is :

- (a) Embryo rescue
- (b) Anther culture
- © Protoplast culture
- (d) Meristem culture

Answer d

Question 12.

One of the ex situ conservation methods for endangered species is :

- (a) Wild life Sancturries
- (b) Biosphere reserves
- © Cryopreservation
- (d) National parks

Answer c

Question 13.

Which of the following is generally used for induced mutagenesis in crop plants?

- (a) X-ray
- (b) UV (260nm)
- © Gamma rays (from Cobalt 60)
- (d) Alpha particles

Answer c

Question 14.

One of the most important functions of botanical gardens is that

- (a) they provide a beautiful area for recreation
- (b) they allow ex situ conservation of germplasm
- © one can observe tropical plants there
- (d) they provide the natural habitat for wild life

Answer b

Question 15.

India's wheat yield revolution in the 1960s was possible primarily due to

- (a) increased chlorophyll content
- (b) mutations resulting in plant height reduction
- © quantitative trait mutations
- (d) hybrid seeds

Answer c

Question 16.

Colchicine brings about

- (a) Chromosome aberrations
- (b) Duplication of chromosomes
- © Gene mutation
- (d) Quick replication

B

ORGANOGENESIS-

1. In plant tissue culture, what is the term ORGANOGENESIS means?

A. Formation of callus culture

- B. Formation of root & shoot from callus culture
- C. Genesis of organ
- D. None of the above

ANSWER: B

2. _____ is a set of techniques used to adapt plants for specific needs or opportunities.

- A. Plant Biotechnology.
- B. Animal Biotechnology.
- C. Nanobiotechnology.
- D. Molecular Genetics.

ANSWER: A

3. In a cell, protoplast consists of the following EXCEPT...?

- A. Cell wall
- B. Cell membrane
- C. Nucleus
- D. Cytoplasm

ANSWER: A

4. Ti plasmid is useful in bringing _____.

- A. new genes into animal cells.
- B. new genes into plant cells.
- C. tumor cells into plant cells.
- D. tumor cells into animal cells.

ANSWER: B

5. What is the name of the bacteria known as natural genetic engineer of plants?

- A. Escherichia coli
- B. Agrobacterium tumefaciens
- C. Pseudomonas aeruginosa
- D. Aspergillus niger

ANSWER: B

6. Media room of a plant tissue culture lab should consist of the following EXCEPT...?

- A. pH meter
- B. Autoclave machine
- C. Analytical balance
- D. Biosafety cabinet

ANSWER: D

7. Plasmids are naturally occurring as _____.

- A. linear single stranded DNA.
- B. linear single stranded RNA.
- C. linear duplex DNA.
- D. circular duplex DNA.

ANSWER: C

8. In growth room, humidifier serves as...?

- A. Contaminant reducer
- B. Humidity reducer
- C. Medium drying preventer
- D. Temperature controller

ANSWER: C

9. What is the name of naturally occurring Auxin in plant?

- A. 1-naphthaleneacetic acid (NAA)
- B. 2,4-Dichlorophenoxyacetic acid
- C. (2,4-D) C. Indole 3-acetic acid (IAA)
- D. 1-naphthoxyacetic acid (NOA)

ANSWER: C

10. Totipotency means

- A. Flowering in Culture medium
- B. Development of Fruit
- C. Development of Complete Organism
- D. none of the above

ANSWER: C

11. Plant tissue culture technique is a redefined method of _____

- A. Hybridization
- B. Vegetative propagation
- C. Asexual reproduction
- D. Selection

ANSWER: B

12. Polyethylene glycol is

- A. Polyethylene glycol is
- B. Electro fusion stimulant
- C. Callus stimulant
- D. Differentiation stimulant

ANSWER: A

13. Antisense RNA molecules have a sequence _____ to normal RNA transcripts

- A. complementary.
- B. non complementary.
- C. opposite.
- D. similar.

ANSWER: A

14. The product of protoplasm fusion is a _____.

- A. uninucleated cell.
- B. multinucleated cell.
- C. homokaryon.
- D. heterokaryon.

ANSWER: D

15. pBR322 is most commonly used _____.

- A. plasmid.
- B. cosmid.
- C. bacteriophage.
- D. bacteria.

ANSWER: A

16. A plant cell without cell wall is called _____.

- A. tropoplast.
- B. protoplast.
- C. chloroplast.
- D. chromoplast.

ANSWER: B

17. Genome of an organism refers to its total _____.

- A. haploid DNA.
- B. number of proteins.
- C. number of chromosomes.
- D. number of genes.

ANSWER: A

18. Enucleated protoplast is called _____.

- A. cytoplast.
- B. cybrid.
- C. tonoplast.
- D. duplast.

ANSWER: C

19. _____ is necessary for drying the washed glass goods.

- A. Vacuum pump.
- B. Hot air oven.
- C. Heater.
- D. Autoclave.

ANSWER: B

20. Which one of the following vitamins is used in PTC medium?

- A. Pyridoxine.
- B. Vitamin A.
- C. Vitamin C.

D. Biotin.

ANSWER: A

21. What type of products is generated after RAPD?

A. Orbitory.

B. Arbitrary.

C. Auxillary.

D. Orbitol.

ANSWER: B

22. LINES stand for _____ Nuclear Elements.

A. Long Interspersed.

B. Large Interspersed.

C. Long Interpierced.

D. Large Interpierced.

ANSWER: A

23. How much percentage of human genome is composed of transposons?

A. 50.

B. 40.

C. 30

D. 20.

ANSWER: A

24. What is class I type transposons?

A. Transposons III.

B. Transposons I.

C. Transposons II.

D. Retroposons.

ANSWER: D

25. RFLP mainly deals with _____.

A. mutations.

B. variations.

C. recombinations.

D. All the above.

ANSWER: D

26. _____ reported first in vitro culture of excised flower buds.

A. P.R. White.

B. C.D. LaRue.

C. S.W. Loo.

D. J.P. Nitsch.

ANSWER: B

27. _____ reported the culture of 5mm shoot tips of Asparagus seedlings on a medium.

A. P.R. White.

B. C.D. LaRue.

C. S.W. Loo.

D. J.P. Nitsch.

ANSWER: C

28. _____ is the culture of excised radicle tips of aseptically germinated seeds?

A. Anther.

B. Root.

C. Organ.

D. Suspension.

ANSWER: B

29. _____ culture is the in vitro culture of a generally shiny special dome-like structure.

A. Anther.

B. Root.

C. Organ.

D. Meristem.

ANSWER: D

30. High cytokinin and low auxin are used in combination for the culture of _____.

A. shoot.

- B. root.
- C. nodule.
- D. organ.

ANSWER: A

31. _____ is the most effective cytokinin commonly used in shoot tip or meristem culture.

- A. NAA.
- B. 2, 4-D.
- C. BAP.
- D. Zeatin.

ANSWER: C

32. Coconut milk and _____ are also effective for the growth of shoot apices.

- A. Gibberellic acid.
- B. Auxin.
- C. Cytokinin.
- D. Ethylene.

ANSWER: A

33. Higher plant body is _____.

- A. unicellular.
- B. multicellular.
- C. enucleated.
- D. binucleated.

ANSWER: B

34. . Small excised portion of the _____ is used to produce mass of cells.

- A. callus.
- B. explant.
- C. fragments.
- D. totipotent.

ANSWER: B

35. The excised plant tissues lose its _____ integrity in culture.

- A. chemical.
- B. physical.
- C. structural.
- D. biological.

ANSWER: C

36. Who first succeeded in promoting the development of callus tissue?

- A. Gautheret.
- B. Nobecourt.
- C. Can Overbeek.
- D. Conklin.

ANSWER: A

37. The callus tissue formation is processed through _____ of the explant.

- A. cell alteration.
- B. cell lengthening.
- C. cell expansion.
- D. cell stringent.

ANSWER: C

38. 2, 4-D alone is sufficient for _____ culture.

- A. callus.
- B. organ.
- C. anther.
- D. pollen.

ANSWER: A

39. _____ is required for growth of cell.

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

ANSWER: B

40. _____ is required for cell division

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

ANSWER: C

41. Callus is yellow due to synthesis of _____ pigments

- A. carotenoid.
- B. anthocyanin.
- C. chlorophyll.
- D. phycocyanin.

ANSWER: A

42. . Callus is purple due to accumulation of _____.

- A. carotenoid.
- B. anthocyanin.
- C. chlorophyll.
- D. phycocyanin.

ANSWER: B

43. Gene silencing is generally termed as _____ of genes.

- A. switching off.
- B. switching on.
- C. absence.
- D. presence.

ANSWER: A

44. Production of ethylene is inhibited by antisense gene _____.

- A. glyphoshate.
- B. ACC synthase.
- C. ACC synthatase.
- D. lyase.

ANSWER: B

45. _____ is responsible for fruit ripening.

- A. Glyphosate.
- B. ACC synthase.
- C. ACC synthetase.
- D. Polygalacturonidase.

ANSWER: D

46. Preservation of germplasm in the frozen state is termed as _____.

- A. cryoprotectant.
- B. cryopreservation.
- C. preservation.
- D. storage.

ANSWER: B

47. Conversion of molecular nitrogen into nitrogenous compound is called as _____.

- A. nitrogen fixation.
- B. nitrogen adsorption.
- C. nitrogen dissociation.
- D. nitrogen absorption.

ANSWER: A

48. _____ fixes molecular nitrogen in the roots of leguminous plant.

- A. Rhizobium species.
- B. Bacillus species.
- C. Clostridium species.
- D. Staphylococcus species.

ANSWER: A

49. Rhizobium is a Gram _____ bacterium

- A. negative rod.
- B. negative spherical.
- C. positive rod.

D. positive spherical.

ANSWER: A

50. Nodule bacteria were isolated by _____.

A. Watson.

B. Crick.

C. Nitesh.

D. Beijerinck.

ANSWER: D

MCCQ of Protoplast-

Date _____

Page _____

- ① The removal of cell wall was given by-
- a) E.C. cocking.
 - b) Xelcel
 - c) Zimmerman.
 - d) Melchers.
- ② The enzyme used in protoplast culture-
- a) cellulase
 - b) Pectinase
 - c) both.
- ③ The enzyme concentration used in protoplast culture -
- a) Macerenzyme R-10.
 - b) cellulose
 - c) Both
 - d) None.
- ④ The enzyme solution PH. -
- a) 6.5
 - b) 5.5
 - c) 4
 - d) 2.
- ⑤ The culture media used in protoplast culture
- a) MS or BS
 - b) Agar media
 - c) Mannitol.
 - d) None.

- Q8 Who is the father of protoplast -
- a) J.E Purkinje (1839)
 - b) J.S Huxley
 - c) Haberlandt.
 - d) none.

Q7 PEG stand for -

- a) Polyethylene Glycol.
- b) Polyether Glycol.
- c) Polyethylene Glycerol.

Q8 The discovery of PEG -

- a) Kao and Michayluk.
- b) Cocking.
- c) Steward.
- d) Haberlandt.

Q9 DMSO stand for -

- a) Dimethyl sulphoxide.
- b) Dimethanol sulphoxide.
- c) Dimethyl sulphate.

Q10 Electrofusion method given by -

- a) Zimmerman.
- b) Cocking.
- c) Steward.
- d) Haberlandt.

ho
2

- 11) Axenic culture is -
- a) Pure culture without any contamination.
 - b) Pure culture without any nutrient.
 - c) culture of tissue
 - d) culture of gene
- 12) callus was grown successfully for the first time by -
- a) white
 - b) Gautheret.
 - c) Nobecourt.
 - d) All.
- 13) A cell from leaf is made to grow into complete plant under culture condition. It shows cellular -
- a) cloning.
 - b) Totipotency
 - c) Hybridisation
 - d) All.
- 14) concept of cellular totipotency was established -
- a) white
 - b) Haberlandt.
 - c) Steward
 - d) cocking.
- 15) Haploid pollen plant from pollen grain were produced by
- a) Maheshwari and Yuha.

16) Shoot bud arise from meristematic cell called -

- a) Regeneration
- b) Meristemoids.
- c) Regeneration.
- d) None.

17) Embryo developing from zygote -

- a) Somatic embryo.
- b) Zygotic embryo.
- c) Pollen embryo
- d) None

18) The other name of pollen embryo -

- a) Somatic embryo
- b) Zygotic embryo
- c) Androgenetic embryo
- d) Pollen embryo.

19) In somatic embryogenesis the auxin essential

- a) IAA.
- b) NAA
- c) 2,4-D (at 0.5-5 mg/l).
- d) IBA.

20) When small and compact cell divide asymmetrically and their daughter cell stick together to produce cell mass -

- a) pidedembryogenic mass.
- b) embryogenic mass.
- c) None
- d) both a and b.

Growth Regulators -

Date _____

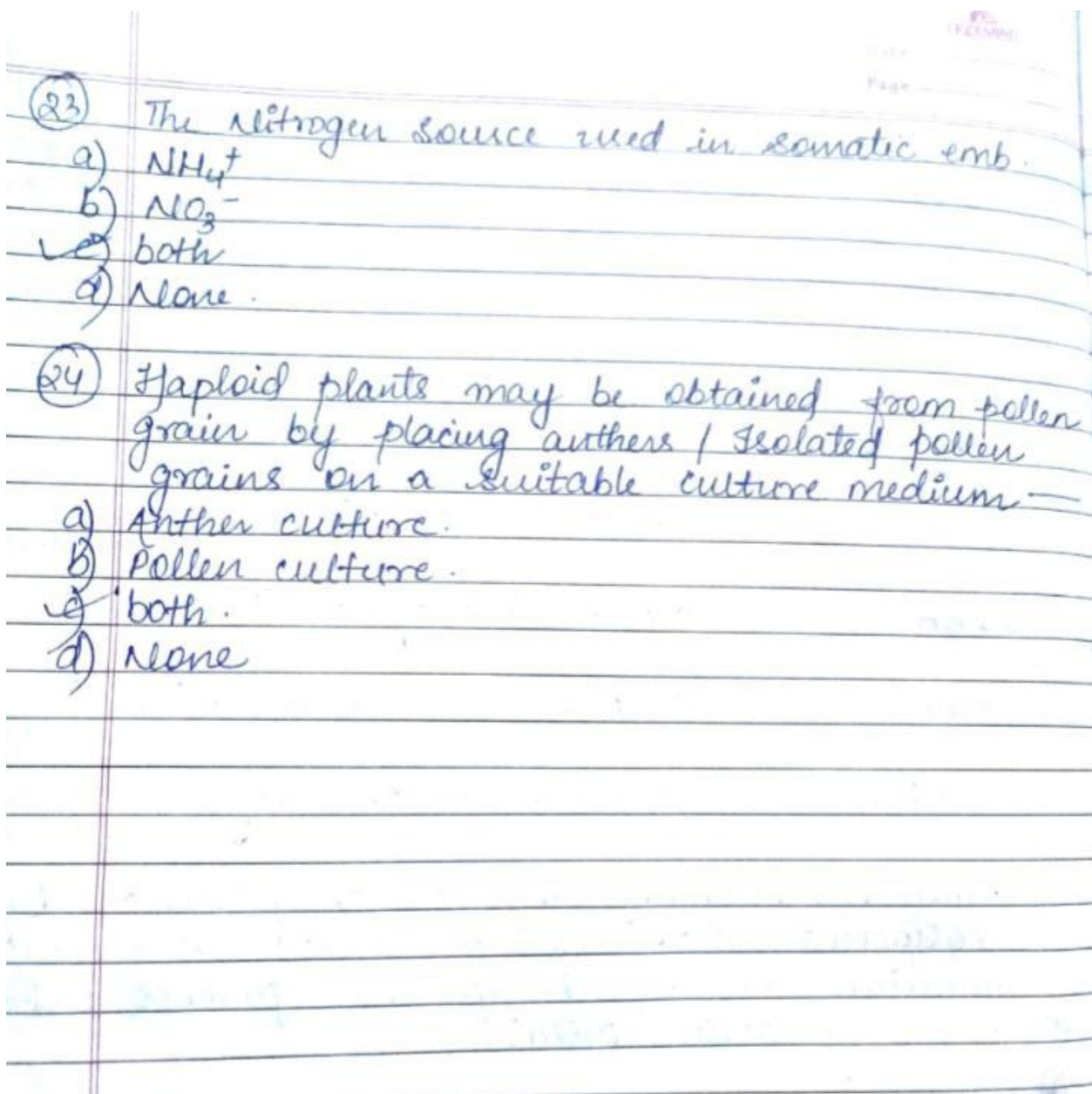
Page _____

			conc ⁿ ($\mu\text{g/l}$)
cytokinin	BAP	benzylamino purine .	0.1-3 .
	TDZ	thidiazuron .	
	ABA	Abscisic Acid .	0.1-0.4
	G ₃	Gibberellins .	0.1-1
Auxin	IAA	Indole Acetic acid .	} 0.1-2
	IBA	Indole 3-butyric acid .	
	NAA	Naphthalene Acetic Acid .	} 1-3 .
	2,4-D .	2,4-Dichlorophenoxy .	

(21) when some glycoprotein which produced by totipotent cell masses or added to culture medium and speed up the process of -
a) arabinogalactan protein .

(22) when somatic embryogenesis begin to germinate immediately after the cotyledons dry stage, this is called -

- development phase .
- conversion phase .
- maturation phase
- None .



Q1. In protoplast fusion, the lack of _____ allows the plasma membrane of two or more protoplast to

Come into intimate contact. (1)

1. Cytoplasmic membrane

2. **Cell wall

3. Cell membrane

4. Nuclear membrane

Q2. Introduction of DNA into cells via liposomes is known as _____. (1)

1. Protoplast fusion

2. **Lipofection

3. Electroporation

4. Electrophoresis

Q3. Which one of the following elements need not be present in expression vector? (1)

1. Selection marker to select host cells containing the vector

2. **Two different origins of replication

3. Promoter sequence upstream of the cloned gene

4. Unique restriction enzyme sites for insertional cloning

Q4. Northern blotting technique is used for the detection of _____. (1)

1. DNA

2. **RNA

3. Proteins

4. Amino acids

Q5. _____ are the DNA molecules which can carry a foreign DNA fragment to be cloned. (1)

1. Host

2. **Vector

3. Pathogen

4. Fungi

Q6. When a vector is designed for expression that is production of protein specified by DNA insert is

Termed as _____. (1)

1. Shuttle vector
2. **Expression vector
3. Bifunctional vector
4. Phagemid

Q7. ____ Vector have been designed in such a way that it can propogate in two different host species.

1. **Shuttle
2. Expression
3. Phagemid
4. Phage

Q8. Particle gun method is also known as ____ . (1)

1. Protoplast fusion
2. Electroporation
3. Lipofection

4. **Biolistic

Q9. PCR stands for _____. (3)

1. Phagocytic chain reaction
2. **Polymerase chain reaction
3. Phagocytic chain reactant
4. Pathological chain reaction

Q10. Enzymes that restrict the viral replication are also known as _____. (3)

1. **Restriction enzymes
2. DNA polymerase
3. DNA ligase
4. Kinase

Q11. _____ Map gives the relative position of genetic markers according to the frequency of

Recombination. (3)

1. **Genetic
2. Physical
3. Geographical
4. Genome sequences

Q12. RFLP stands for _____. (3)

1. Polymerase chain reaction
2. Random Amplification of DNA
3. Amplified Fragment Length Polymorphism
4. **Restriction Fragment Length Polymorphism

Q13. A complete set of chromosome or genetic material of any organism is called as _____. (3)

1. Gene
2. DNA

3. RNA

4. **Genome

Q14. Human genome project started in ____ and ended in ____ . (3)