Dayanand Science College, Latur

Department of Biotechnology

Class: M.Sc. BT S.Y. (sem-III)

Subject: Plant & agriculture biotechnology (BT-XIV)

Teacher – Bansode S. M.

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**1. Who is known as the father of tissue culture?**

(a) Bonner

(b) Laibach

(c) Haberlandt

(d) Gautheret

**2. The production of secondary metabolites requires the use of \_\_\_\_\_\_\_\_.**

(a) Meristem

(b) Protoplast

(c) Axillary buds

(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

**4. What is Dimethyl sulfoxide used for?**

(a) A gelling agent

(b) Cryoprotectant

(c) Chelating agent

(d) An Alkylating agent

**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

**6. Synthetic seeds are produced by the encapsulation of somatic embryos with\_\_\_\_\_\_\_\_\_\_\_.**

(a) Sodium acetate

(b) Sodium nitrate

(c) Sodium chloride

(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

**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

**9. In tissue culture of parenchyma, mitosis is accelerated in the presence of \_\_\_\_\_\_\_\_.**

(a) Auxin

(b) Cytokinin

(c) Gibberellin

(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.

**11. Haploid plants can be obtained from\_\_\_\_\_\_\_\_.**

(a) Anther culture

(b) Bud culture

(c) Leaf culture

(d) Root 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

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

(a) Embryo

(b) Nucleus

(c) Apical bud

(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

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

(a) Ethylene

(b) Cytokinin

(c) Auxin

(d) Gibberellin

**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

**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

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

(a) Mannitol

(b) Polyethylene glycol

(c) Sorbitol

(d) Mannol

**19. Which of the following plant cells shows totipotency?**

(a) Cork cells

(b) Meristem

(c) Sieve tube

(d) Xylem vessels

**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

**21. The process of expression of foreign genes in a plant is called\_\_\_\_\_\_\_\_\_\_\_**
a) Gene expression
b) Transgenesis
c) Genetic transformation
d) Cell hybridization

**22. In transgenesis, only cloned genes are introduced into the donor.**
a) True
b) False

**23. Name the strategy where two-plasmid system is used for the introduction of the gene?**
a) Binary vector system
b) Co-integration vector strategy
c) Agrobacterium
d) Selectable marker strategy

**24. Which of the following is considered as a visual marker?**
a) Antibiotic marker
b) Resistance marker
c) Selectable marker
d) Screenable marker

**25. Name the marker gene of streptomycin?**
a) HPT
b) SPT
c) PAT
d) BXN

**26. Name the first transgenic virus resistant plant?**
a) Rice
b) Cotton
c) Tobacco
d) Tomato

**27. Which of the following is supplemented with vitamin A in order to improve its nutritional** quality?
a) Cotton
b) Potato
c) Tomato
d) Rice

**28. Name the enzyme which has silenced to delay the ripening process?**
a) Polygalacturonase
b) Glyphosate
c) ADA
d) P53
**29. Name the technique which is used to enhance the life of a tomato.**
a) Antisense technology
b) In vitro gene transfer
c) Ex vivo gene transfer
d) Molecular farming

**30. As a result of genetically modified crops, chemical use on farms has:**

a. Gone *up* dramatically.
b. Gone *down* dramatically.
c. Gone *up* on some but no change on others.
d. Gone *down* on some crops but there is little or no change on others.

**31. The first plant that was modified by genetic engineering was produced in a laboratory in:**

a. 1954.
b. 1964.
c. 1974.
d. 1984.

**32. Will insects develop resistance to the toxins produced in Bt corn?**

a. It is impossible for insects to develop resistance to Bt corn.
b. It is unlikely that insects will develop resistance to Bt corn.
c. Under certain conditions insects may develop resistance to Bt corn.
d. It is almost certain that insects will develop resistance to Bt corn.

33. Does Bt corn or Bt cotton only kill specific pests that damage the crop?

a. The Bt toxin kills all insects.
b. The Bt toxin kills European corn borer and other flying insects.
c. The Bt toxin kills the European corn borer and its close relatives.
d. The Bt toxin only kills the insects for which it is targeted.

34. When did crops become resistant to herbicides?

a. Crops have always been resistant to some herbicides.
b. After the introduction of Bt corn in 1997.
c. After the introduction of Roundup-ready soybeans in 1996.
d. Crops are not resistant to herbicides.

35. Can genes escape from genetically modified crops and jump to other plants? a. Yes, and often do.
b. Only to some crops, but those crops aren't genetically modified.
c. Only during rare climatic conditions.
d. No, genes cannot move from species to species without human intervention.

36. If we make plants that survive in regions where they normally wouldn't survive, such as very cold regions, could this cause unexpected ecological changes? a. No, the crops are only suited for cultivated fields.
b. It is possible that a crop might invade the surrounding ecosystem.
c. It is certain that the crop would move from the fields into the surrounding ecosystem.

37. How long does it take to develop a new genetically modified crop?

a. Twenty years.
b. Ten years.
c. Five years.
d. One year.

38. Can scientists predict with certainty where an inserted gene will go on a plant chromosome?

a. With modern genetic techniques, scientists can insert genes precisely.
b. Genes are inserted on the proper chromosome, but there is no control on where it goes on the chromosome.
c. Scientists have a general idea of where the gene will go and what it will do to the plant.
d. It's just a shot in the dark.

39. Can agricultural biotechnology reduce our dependence on petroleum? a. Most of it.
b. Some of it.
c. No effect on petroleum use.

40.Transgenic plants are developed by a)Introducing foreign genes b)Introducing gene mutations c)Deleting certain chromosomes part d)Stopping spindle formation

41. Which of the following statements is correct?

1. Atmosphere is the major reservoir for plants
2. Nitrogen is the most abundant nutrient for plants
3. Nitrogen cycle is a sedimentary cycle
4. All

42. Nitrogen is absorbed by the plants in the form of

1. Ammonium
2. Nitrites
3. Nitrates
4. All

43. Nitrogen fixation is the conversion of

1. N2to N
2. N2to NH3
3. N2to NO3–
4. N2to urea

44. Important enzymes involved in nitrogen fixation are

1. Nitrogenase and hydrogenase
2. Nitrogenase and hexokinase
3. Nitrogenase and peptidase
4. Nitrogenase and hydrolyase

45. Symbiotic nitrogen-fixing cyanobacteria are not present in

1. *Azolla*
2. *Gnetum*
3. *Anthoceros*
4. *Cycas*

46. How many molecules of ATP are required to fix one molecule of nitrogen?

1. 12
2. 20
3. 6
4. 16

47. Ammonification is the formation of

1. Ammonia from nitrates by decomposers
2. Ammonia from nitrogen
3. Ammonia from amino acids
4. Ammonia from nitrates by nitrogen fixers

48. Conversion of nitrates to nitrogen is called

1. Ammonification
2. Nitrification
3. Nitrogen fixation
4. Denitrification

49. Conversion of nitrites to nitrates is called

1. *Nitrosococcus*
2. *Clostridium*
3. *Nitrobacter*
4. *Nitrosomonas*

50. Conversion of ammonia to nitrite and then to nitrates is called

1. Ammonification
2. Denitrification
3. Assimilation
4. Nitrification

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| 51.  | Black stem rust of wheat caused by: |
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| --- | --- | --- | --- |
| A. | Pucciniagraministritici | B. | Pucciniarecondita |
| C. | Pucciniastriformis | D. | Ustilagotritici |

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| 52.  | Black tip of mango is caused by: |
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| --- | --- | --- | --- |
| A. | Phythium | B. | Phytosynthetas |
| C. | Boron deficiency | D. | Zinc deficiency |

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| 53.  | Plant Pathology is \_\_\_\_ word. |
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| A. | English | B. | Latin |
| C. | Greek | D. | Mandarin |

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| 54.  | Bordeaux mixture was discovered by P.A. Millardet of France during the year 1882 following his chance observation of farmer's practice for protection against: |
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| A. | Plasmoparaviticola on grapevine | B. | Uncinula nectar on grapevine |
| C. | Podosphaeraleucotricha on apple | D. | Venturiainequalis on apple |

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| 55.  | Botulism is caused by species of: |
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| --- | --- | --- | --- |
| A. | Bacillus | B. | Pseudomonas |
| C. | Agrobacterium | D. | Clostridium |

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| 56.  | Brown spot of maize is caused by: |
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| --- | --- | --- | --- |
| A. | Sclerosporasorghi | B. | Physoderuszeamaydis |
| C. | Alternariasolani | D. | Cercosporaperfonats |

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| 57.  | By 1857, Barkley and Schacht discovered root knot nematodes and cyst nematode in: |
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| --- | --- | --- | --- |
| A. | Sweet sorghum | B. | Sugarcane |
| C. | Potato | D. | Sugarbeet |

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| 58.  | Carborundum powder is: |
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| --- | --- | --- | --- |
| A. | Silicon carbide | B. | Aluminium oxide |
| C. | Diatomaceous earth | D. | Calcium carbonate |

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| 59.  | Cocci are: |
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| A. | Spiral shaped | B. | Spherical shaped |
| C. | Rod shaped | D. | None of the above |

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60. Which disease of plant is known as ring disease?
A. Citrus Canker
B. Black arm of cotton
C. Wilt of Potato
D. None of the above

61. Name the disease of plant in which large yellow spot appears on the leaves?
A. Bacterial Blight
B. Bacterial Spot
C. Aphids
D. Botrytis

62. Bunchy top of banana plant disease is caused due to:
A. Bacteria
B. Fungus
C. Virus
D. None of the above

63. Name a disease of plant in which dark to light brown rot forms around wounded plant tissue?
A. GrayMold
B. Citrus Canker
C. Spider Mites
D. None of the above

64. In which disease of plant white mildew appears typically on underside of leaves?
A. Cylindrocladium
B. Angular leaf Spot
C. Downy Mildew
D. Black arm of Cotton

65. Bacterial blight of Rice disease of plant is caused due to which bacteria?
A. Pseudomonas bacteria
B. Xanthomonascitri bacteria
C. Xanthomonasoryzae bacteria
D. None of the above

66. In which of the following diseases of plant chlorophyll of the leaves get destroyed and leaves get shrinked?
A. Mosaic disease of tobacco
B. Citrus Canker
C. Tundu disease of wheat
D. Rhizoctonia

67. Name the disease of plant in which leaves, branches, fruits all are affected?
A. Spider Mites
B. Mealybugs
C. Aphids
D. Citrus Canker

68. Name a disease of plant in which fine webbing occurs on undersides of the leaves?
A. Spider Mites
B. Anthracnose
C. Mealybugs
D. Rhizoctonia

69. In which disease of plant stem rot at soil line with brown to red lesions?
A. Rhizoctonia
B. Angular leaf Spot
C. Bacterial Blight
D. Bacterial Spot

70. Agar is commercially obtained from

1. Blue-green algae
2. Red algae
3. Brown algae
4. Green algae

71. Organic farming is the technique of raising crops through uses of?

a) manures
b) biofertilizers
c) resistant varieties
d) all of these

72. Pyrethrin is got from

a) Azardirachtaindica
b) Urticadioca
c) Tagetuserecta
d) Chrsanthemumcinerarifolium

73. Which one is green manure/ biofertilizer

a) Sesbania
b) Rice
c) Oat
d) Maize

74. Azolla is used as biofertilizer as it has

a) Rhizobium
b) Cyanobacteria
c) Mycorrhiza
d) large quantity of humus

75. The most quickly available source of nitrogen to plants are

a) amide fertilizers
b) ammonia fertilizers
c) nitrate fertilizers
d) ammonia nitrate fertilizer

76. Most effective pesticide is

a) carbamates
b) Organophosphates
c) organochlorines
d) All of these

77. Which is true for DDT? It is

a) not a pollutant
b) an antibiotic
c) an antiseptic agent
d) a non degradable pollutant

78. Which is major component of Bordeaux Mixture?

a) copper sulphate
b) sodium chloride
c) calcium chloride
d) magnesium sulphate

79. Which one is correctly matched?

a) carbamates- malathion
b) organophosphates- carbofuran
c) carbamates- malathion
d) organochloride- endosulphan

80. IPM stands for

a) integrated pest manufacture
b) integrated plant management
c) integrated plant management
d) integrated pest management

81. Azolla is used as biofertilizer as it has

a) Rhizobium
b) Cyanobacteria
c) Mycorrhiza
d) large quantity of humus

82. Green manuring increases the crop yield by

a) 5-10%
b) 15-25%
c) 30-50%
d) 80-90%

83. Insecticides generally attack

a) respiratory system
b) nervous system
c) muscular system
d) circulatory system

84. Organisms associated with sorghum and cotton, which provide nutrition to them area) Azospirillium, Azotobacter
b) Azotobacter, Azospirillum
c) Anabaena, Rhizobium
d) Rhizobium, Azotobacter

85. Azolla as biofertilizer, increases the yield of rice fields bya) 10%
b) 20%
c) 30%
d) 50%

86.This weed has been eradicated by biological control

(a) Chrysanthemum

(b) Cactus

(c) Parthenium

(d) Eichhornia

87.The phenomenon of using a predator to control pests is

(a) artificial control

(b) biological control

(c) confusion technique

(d) genetic engineering

88.This is an effective plant insecticide

(a) Nicotine

(b) Cinerin

(c) Pyrethrin

(d) all of these

89.The pheromone coated paper strips in the confusion technique are thrown over an area to

(a) confuse males so that they are unable to locate females

(b) repel insects from a region

(c) confuse females so that they are unable to locate males

(d) attract insects and kill them

90.“Devine” and “Collego” are two agricultural substances used as

(a) Insect hormones

(b) Biofertilizers

(c) Bioherbicides

(d) Natural insecticides

91.Rotenone is a

(a) insect hormone

(b) natural insecticide

(c) bioherbicide

(d) natural herbicide

92.The wild growth of \_\_\_\_\_\_ is checked with Cochineal insect

(a) screwworm

(b) aphids

(c) Eichhornia

(d) Opuntia

93.Pyrethrin is extracted from

(a) Poaindica

(b) Helianthus annuus

(c) Azadirachtaindica

(d) Chrysanthemum cinerariifolium

94.In 1981, the first bioherbicide developed was based on

(a) Azadirachtaindica

(b) Bacillus thuringiensis

(c) Phytophthorainfestans

(d) Phytophthorapalmivora

95. Transgenic crop developed to tolerate herbicides is

(a) Tomato

(b) sunflower

(c) Tobacco

(d) both (a) and (b)

96. Which of the following is used as a biocontrol agent against caterpillars of butterflies?

(a) Trichoderma

(b) Streptococcus

(c) Bacillus Thuringiensis

(d) Saccharomyces cerevisiae

97. Which of the following is the use of microbes as a biological control agent for pests/diseases?

(a) Bt-cotton to increase the yield of cotton

(b) Ladybird beetle for controlling aphids in mustard

(c) *Trichodermasp* against plant pathogens

(d) *Nucleopolyhedrovirus* against white rust in *Brassica*

98. A biocontrol agent against plant diseases

(a) Trichoderma

(b) Glomus

(c) Bacillus thuringiensis

(d) baculovirus

99. Which of the following is not a biopesticide?

(a) Nucleopolyhedrovirus

(b) Xanthomonascampestris

(c) Bacillus thuringiensis

(d) Trichodermaharzianum

100. *Trichodermaharzianum* is used for

(a) wasteland reclamation

(b) bioremediation of contaminated soil

(c) biocontrol agent against plant pathogens

(d) gene transfer

Answer key:-

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1 – c | 21 – c | 41 – a | 61 – a | 81 – b |
| 2 – d | 22 – a | 42 –d | 62 – c | 82 – c |
| 3 – b | 23 – a | 43 – b | 63 – a | 83 – a |
| 4 – a | 24 – d | 44 – a | 64 – c | 84 – a |
| 5 – d | 25 – b | 45 – b | 65 – c | 85 – d |
| 6 – d | 26 – c | 46 – d | 66 – a | 86 – c |
| 7 – b | 27 – d | 47 – c | 67 – d | 87 – b |
| 8 – d | 28 – a | 48 – d | 68 – a | 88 – d |
| 9 – d | 29 – a | 49 – c | 69 – a | 89 – a |
| 10 – a | 30 – d | 50 – d | 70 – b | 90 – c |
| 11 – a | 31 – d | 51 – a | 71 – d | 91 – b |
| 12 – b | 32 – d | 52 – c | 72 – d | 92 – d |
| 13 – d | 33 – c | 53 – c | 73 – a | 93 – d |
| 14 –a | 34 – a | 54 – a | 74 – b | 94 – d |
| 15 –c | 35 – a | 55 – d | 75 – c | 95 – c |
| 16 –a | 36 – b | 56 – b | 76 – b | 96 – c |
| 17 –c | 37 – b | 57 – d | 77 – d | 97 – c |
| 18 –b | 38 – d | 58 – a | 78 – a | 98 – a |
| 19 –b | 39 – b | 59 – b | 79 – d | 99 – b |
| 20 –b | 40 – a | 60 – c | 80 – d | 100 – c |