

Botany(Ph.D. & M.Phil.)

1. The first organism to be studied for restriction enzymes was
 - A) *Haemophilus influenza*
 - B) *E.coli* K12
 - C) *E.coli* K11
 - D) *Haemophilus influenzae* Rd
2. Which part of Ginseng is economically important?
 - A) Leaf
 - B) Stem
 - C) Root
 - D) Inflorescence
3. Which of the following fern is used for phytoremediation?
 - A) *Sphagnum flexuosum*
 - B) *Marchantia polymorpha*
 - C) *Salvinia natans*
 - D) *Pteris vittata*
4. Which of the following is called as the “Reindeer moss”
 - A) *Cetraria islandica*
 - B) *Cladonia rangiferina*
 - C) *Peltigera canina*
 - D) *Chryothrix chlorina*
5. DNA microarrays make it possible to monitor
 - A) Gene synthesis
 - B) Gene expression
 - C) Gene cloning
 - D) Gene amplification
6. The succulents in which leaves become fleshy are called
 - A) Sclerophyllous
 - B) Phyrophyllous
 - C) Hygrophyllous
 - D) Malacophyllous
7. The correct pattern in development of somatic embryos in dicotyledons is
 - A) Globular-torpedo shaped-heart shaped
 - B) Globular-heart shaped-torpedo shaped
 - C) Torpedo shaped-heart shaped-globular
 - D) Heart shaped-globular –torpedo shaped
8. What is the mobile genetic component in the Ti plasmid of *Agrobacterium tumefaciens*?
 - A) T DNA
 - B) Virulence region
 - C) Opines
 - D) Left Border
9. The genes for which plant was used in the development of golden rice?
 - A) *Nicotiana tabaccum*
 - B) *Narcissus pseudonarcissus*
 - C) *Lycopersicon esculentum*
 - D) *Solanum tuberosum*
10. Plant genetic transformation by electroporation mostly utilizes
 - A) Callus
 - B) Protoplasts
 - C) Organs
 - D) Anther culture
11. Mitotic chromosomes show a striking and reproducible banding pattern when stained with
 - A) Fuelgen
 - B) Giemsa
 - C) Acetocarmine
 - D) Acetoorcein

12. DNA fingerprinting refers to
- A) Techniques used for identification of fingerprints of individuals
 - B) Molecular analyses of profiles of DNA samples
 - C) Analysis of DNA samples using imprinting devices
 - D) Techniques used for molecular analyses of cDNA samples
13. Nearly all the major classes of lipids required for production of cell membrane are synthesized in
- A) Endoplasmic reticulum
 - B) Nucleus
 - C) Ribosomes
 - D) Golgi bodies
14. A catalytic subunit that transfers phosphate groups from ATP to amino acids during interphase is
- A) MPF
 - B) Cdc2 kinase
 - C) Cyclin
 - D) Threonine
15. Of the subunits comprising RNA polymerase, the only factor that is involved in the initiation of transcription is
- A) α
 - B) β
 - C) γ
 - D) σ
16. The filamentous meshwork lining the inner surface of the nuclear envelope is called
- A) Nuclear network
 - B) Nuclear lamina
 - C) Nuclear matrix
 - D) Nuclear kinesins
17. A regulatory mechanism for controlling gene expression involving premature termination of transcription is
- A) Attenuation
 - B) Repression
 - C) Induction
 - D) Antitermination
18. Polymerization of gel in SDS-PAGE is initiated by
- A) SDS
 - B) TEMED
 - C) Acrylamide
 - D) Bis-acrylamide
19. A genetically engineered organism used successfully in bioremediation of oil spills is a species of
- A) *Pseudomonas*
 - B) *Trichoderma*
 - C) *Xanthomonas*
 - D) *Bacillus*
20. Gram negative bacteria detect and respond to chemicals in their surroundings by
- A) Volutin granules
 - B) Lipopolysaccharide
 - C) Muramic acid
 - D) Porins
21. Which part of the coconut produces coir?
- A) Seed coat
 - B) Pericarp
 - C) Epicarp
 - D) Mesocarp
22. Which of the following is used for staining proteins?
- A) Bromophenol blue
 - B) Methylene blue
 - C) Coomassie blue
 - D) Ethidium bromide

23. Drupe is recognized by
 A) Fleshy seed coat B) Stony endocarp C) Thin seed coat D) Stony mesocarp
24. Dideoxynucleotides are used in which of the following techniques?
 A) Cloning B) DNA sequencing
 C) Polymerase chain reaction D) Southern Blotting
25. Porogamy is
 A) Fertilization in which pollen tube enters the ovule through integument
 B) Fertilization in which pollen tube enters the ovule through chalaza
 C) Fertilization in which pollen tube enters the ovule through micropyle
 D) Fertilization without pollen grain formation
26. An inflorescence in which flowers arise from different point but reach at same point
 A) Catkin B) Spadix C) Umbel D) Cymose
27. In a PCR reaction, the primers move
 A) Towards only the 3' end B) Towards only the 5' end
 C) Parallel to each other D) Towards each other along opposite strands
28. During gel electrophoresis, the current in the solution between the electrodes is conducted mainly by
 A) Polyacrylamide B) Sodium dodecyl sulphate
 C) Buffer D) Ammonium persulphate
29. Which is an indirect method of gene transfer in plants?
 A) Biolistics B) Electroporation C) Macroinjection D) *Agrobacterium*
30. Consumption of golden rice will help combating which deficiency?
 A) Vitamin A B) Vitamin B C) Vitamin C D) Vitamin D
31. Which of the following are tools used to detect polymorphism in plants?
 A) RFLP and QTL B) AFLP and PCR
 C) RFLP and AFLP D) PCR and QTL
32. Which of the following is a predatory fungus?
 A) *Puccinia* B) *Fusarium* C) *Arthrobotrys* D) *Alternaria*
33. The fruiting body of *Aspergillus* is called
 A) Apothecium B) Cleistothecium C) Perithecium D) Hypanthodium

34. One of the major application of embryo culture is in
- | | |
|---------------------------------------|-------------------------------------|
| A) Clonal propagation | B) Production of alkaloids |
| C) Production of somaclonal variation | D) Overcoming hybridization barrier |
35. Which of the following is not a plant derived elicitor?
- | | | | |
|-----------|-----------|--------------|-------------|
| A) Chitin | B) Pectin | C) Cellulose | D) Chitosan |
|-----------|-----------|--------------|-------------|
36. Which of the following is not a type of signaling molecule?
- | | | | |
|-----------------|------------------|-------------|----------------------|
| A) Testosterone | B) Retinoic acid | C) Thyroxin | D) Adenylate cyclase |
|-----------------|------------------|-------------|----------------------|
37. The enzyme that catalyzes the splitting of phosphatidylinositol biphosphate (PIP₂) into two molecules of inositol triphosphate (IP₃) and diacylglycerol in cell signaling, is
- | | |
|------------------------|--------------------|
| A) Phosphokinase C | B) Phospholipase C |
| C) Phosphodiesterase C | D) Lipokinase |
38. Capping of the 5' end of RNA during RNA processing involves
- | | |
|---------------------------------------|--|
| A) Addition of carboxylic tail domain | B) Attachment of methylated guanine base |
| C) Methylated uridine base | D) Linking a string of phosphates |
39. Which of the following bacteria is able to oxidize ammonia?
- | | | | |
|--------------|----------------|----------------|------------------|
| A) Nitospina | B) Azotobacter | C) Nitrococcus | D) Nitrosobacter |
|--------------|----------------|----------------|------------------|
40. The chief source of nitrogen for green plants is
- | |
|---|
| A) Atmospheric nitrogen |
| B) Nitrates |
| C) Ammonium salts |
| D) Low molecular weight organic nitrogenous compounds |
41. Vascular and cork cambium are examples of
- | | |
|--------------------------|---------------------|
| A) Lateral meristems | B) Apical meristems |
| C) Intercalary meristems | D) Collenchyma |
42. Which is the most advanced order in gymnosperms?
- | | | | |
|--------------|----------------|-------------|------------|
| A) Cycadales | B) Coniferales | C) Gnetales | D) Taxales |
|--------------|----------------|-------------|------------|
43. Which is the most advanced group of algae?
- | | | | |
|---------------|---------------|---------------|----------------|
| A) Cyanophyta | B) Rhodophyta | C) Phaeophyta | D) Chlorophyta |
|---------------|---------------|---------------|----------------|
44. Which of the following is absent in the xylem of gymnosperms?
- | | | | |
|-------------|---------------|-----------|----------------|
| A) Tracheae | B) Parenchyma | C) Fibers | D) Sieve cells |
|-------------|---------------|-----------|----------------|

45. Pyrethrin is obtained from

- A) *Azadiracta indica*
- B) *Urtica dioica*
- C) *Tagetes erecta*
- D) *Chrysanthemum cinerarifolium*

46. Which of the following group of plants is the best indicator of sulfur dioxide pollution?

- A) Bryophyte
- B) Pteridophyte
- C) Lichen
- D) Algae

47. *Azolla* is used as a biofertilizer as it has

- A) Rhizobium
- B) Micorhizza
- C) Cyanobacteria
- D) Large quantity of humus

48. Precursor of Indole acetic acid is

- A) Glycine
- B) Methionine
- C) Isopentynyl pyrophosphate
- D) Tryptophan

49. Auxin transport is

- A) Polar
- B) Non-polar
- C) Symplast
- D) Apoplast

50. Pure line breed refers to

- A) Heterozygosity only
- B) Homozygosity only
- C) Homozygosity and self assortment
- D) Heterozygosity and linkage

x-x-x

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M.Phil./PHD - 2016

ANSWERS / KEY

Subject: Botany(Ph.D. & M.Phil.)

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|----|----|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| B | C | D | B | B | D | B | A | B | B |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| B | B | A | B | D | B | A | B | A | B |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| D | C | B | B | C | C | D | C | D | A |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| C | C | B | D | C | D | B | B | C | B |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
| A | C | B | A | D | C | C | D | A | C |

Note: An 'X' in the key indicates that either the question is ambiguous or it has printing mistake. All candidates will be given credit for this question