

**Government of Puducherry**  
**Directorate of School Education**  
**Competitive Examination for Empanelment of Guest Lecturers-2019**

**QUESTION BOOKLET**

**SUBJECT: BOTANY**

**ROLL NO: .....**

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**Time: 2:00 Hours**

**Total Marks: 90**

**INSTRUCTIONS TO CANDIDATES**

- 1) Write Roll Number in the space provided in this Question Booklet above.
- 2) The Candidate should check the question paper that question paper consists of all the pages and that it is not torn.
- 3) Please write the Roll No. etc., on the OMR sheet using Black Ball point pen only.
- 4) The candidate shall use only "**BLACK BALL POINT PEN**" for marking the answers.
- 5) There are **90 questions**. For every correct answer 1 (One) mark will be awarded and for each wrong answer 0.25 mark will be deducted.
- 6) Use of eraser/ whitener/ correction fluid is prohibited on OMR answer sheets.
- 7) Use of calculators, cell phones, logarithmic table, electronic gadgets etc., is strictly prohibited.
- 8) For any rough work, use the rough page given at the end of the Question Booklet.
- 9) The candidate has to deposit the original copy of OMR sheet along with the Hall Ticket after the completion of examination and may carry the duplicate OMR (impression) sheet for reference.
- 10) No candidate is allowed to leave the examination centre premises till the completion of the entire examination process.
- 11) Please avoid marking of answers on Question Booklet.
- 12) The questions in English version alone will be taken as authentic though questions are given in other languages for the convenience of the candidates.

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**BOTANY**

1. The induction of adventitious roots and shoots from cells in tissue culture is called as
  - a. Callus culture
  - b. Micropropagation
  - c. Organogenesis
  - d. Suspension culture
2. Indole-3-acetic acid is a plant growth regulator, belongs to the
  - a. Cytokinins
  - b. Gibbrellins
  - c. Auxins
  - d. None of these
3. The most important difference between plasmid and episome is
  - a. Plasmid is circular, episome is linear
  - b. Episomes can be inserted into host genome
  - c. Episome is circular, plasmid is linear
  - d. Plasmid can be inserted into host genome, episomes are not
4. A low auxin: cytokinin ratio leads to the formation of
  - a. Roots
  - b. Shoots
  - c. Fruits and flowers
  - d. All of these
5. Klenow fragments are derived from
  - a. DNA Polymerase-I
  - b. RNA Polymerase-II
  - c. DNA Ligase
  - d. Reverse transcriptase
6. Someone can produce hairy root cultures by use of
  - a. *Agrobacterium rhizogenes*
  - b. *Agrobacterium tumefaciens*
  - c. *Agrobacterium vitis*
  - d. *Agrobacterium rubi*
7. Which part of fungus is used as spawn for cultivation of mushroom?
  - a. Monokaryotic mycelium
  - b. Fruiting body
  - c. Basidiospores
  - d. Secondary mycelium

8. Which is the edible basidiomycetous fungus?
  - a. *Amanita*
  - b. *Morchella*
  - c. *Lycoperdon*
  - d. *Polyporus*
9. What is the most important function of biofertilizers?
  - a. Increase chemical process
  - b. Increase physiological process
  - c. Increase biological process
  - d. Increase photosynthetic process
10. The group of individuals taken for study in biostatistics is called as
  - a. Block
  - b. Group
  - c. Population
  - d. Flock
11. In biostatistics, flower colour is a type of variable
  - a. Qualitative variables
  - b. Quantitative variables
  - c. Absolute variables
  - d. Continuous variables
12. Cryopreservation technique is used for
  - a. Crystallization of food
  - b. Food packing
  - c. Conservation of seeds and propagules
  - d. Preservation of excess production of vegetables
13. The pH of soil can be raised by addition of
  - a. Lime
  - b. Sand
  - c. Sulphur
  - d. Nitrogen
14. The type of growth regulators present in Rootex solution are
  - a. Auxins
  - b. Cytokinins
  - c. Gibbrellins
  - d. Ethylene
15. 'NABARD' is helping through
  - a. Farmers' loaning
  - b. Refinancing to agricultural financing institutions
  - c. Agricultural research
  - d. Development of agriculture

16. Name the instrument which is used for sowing of seeds with fertilizer together
- Seed drill
  - Ferti-cum seed drill
  - Dibbler
  - Seed sowing behind plough
17. What is the most preferred use of plant tissue culture technique?
- Eliminate virus
  - Cross two varieties
  - Rapidly increase the size of the trees by strengthening the stem
  - Improve yield of crops
18. What are the advantages of artificial methods of vegetative propagation?
- Crops with better quality
  - Crops with more yield
  - Ability to produce plants with desirable trait
  - None of these
19. The production of mixture of diploids along with haploids after culturing the anthers is due to
- Exine of pollen grain
  - Generative cell of pollen grain
  - Vegetative cell of pollen grain
  - Cells of anther wall
20. Name, which is not a plant growth regulator
- Auxins
  - Gibberellins
  - Acetic acid
  - Ethylene
21. What is the source of flax fibres?
- Linum usitatissimum*
  - Cannabis sativa*
  - Crotalaria juncea*
  - Cocos nucifera*
22. Drug, used in normalization of high blood pressure is obtained from which plant?
- Aconitum chasmanthum*
  - Rauvolfia serpentina*
  - Centella asiatica*
  - Solanum nigrum*

23. The word 'Intellectual property rights' includes
- Know-how
  - Copyrights
  - Trade dress
  - All the above
24. What is trade mark?
- It is represented graphically
  - It is capable of distinguishing the goods or services of one person from those of others
  - Both (a) and (b)
  - None of these
25. What is the time duration of protection of literary work in India?
- 25 year after the death of author
  - 40 year after the death of author
  - 60 year after the death of author
  - Lifetime of author
26. The type of agreement which is enforceable by law is called as
- Void agreement
  - Illegal agreement
  - Valid agreement
  - Unenforceable agreement
27. The plants used by the farmers to make green manure mainly belongs to the family
- Asteraceae
  - Fabaceae
  - Solanaceae
  - Poaceae
28. Composted manure is produced from
- Farmyard manure and green manure
  - Farm refuse and house hold refuse
  - Organic remains of biogas plants
  - Rotten vegetables and animal refuse
29. Biolistic is suitable for
- Disarming of pathogen vector
  - Transformation of plant cells
  - Constructing recombinant DNA by joining with vectors
  - DNA fingerprinting

30. Which is the natural insecticide?
- Nicotine
  - Pyrethrum
  - Both (a) and (b)
  - None of these
31. Tobacco Mosaic Virus was first isolated in crystalline form by
- Miller
  - Oparin
  - Stanley
  - Nirenberg
32. Name of the causal organism of the disease black rust of wheat?
- Ustilago*
  - Penicillium*
  - Agaricus*
  - Puccinia*
33. Name of the fungus which was responsible for the Bengal famine during 1942-43?
- Xanthomonas malvacearum*
  - Pyricularia oryzae*
  - Helminthosporium oryzae*
  - Puccinia graminis*
34. What are VAM?
- Saprophytic bacteria
  - Symbiotic fungi
  - Saprophytic fungi
  - Symbiotic bacteria
35. Quarantine regulations are related to
- Use of pesticides for the diseased plants
  - Prevention of entry of diseased plants in the country
  - Growing of trees to save earth from global warming
  - Promotion of dry farming in sandy soil
36. The products of fermentation / anaerobic respiration by Yeast are
- $H_2O$  and  $CH_3CHO$
  - $CO_2$  and  $CH_3CHO$
  - $O_2$  and  $C_2H_5OH$
  - $CO_2$  and  $C_2H_5OH$
37. *Rhynia* belongs to which geological time scale/period?
- Silurian
  - Cretaceous
  - Devonian
  - Other

38. What is the name of the tallest fern?
- Alsophila*
  - Cyathea*
  - Dryopteris*
  - Pteris*
39. Name of the type of life cycle of *Cycas*?
- Haplontic
  - Diplohaplontic
  - Diplontic
  - Haploid
40. Which is homologous among these?
- Leaves of Moss and *Selaginella*
  - Endosperm of *Pinus* and prothallus of *Adiantum*
  - Roots of ferns and moss
  - Endosperm of *Pinus* and Maize
41. Birbal Sahni Institute of Palaeobotany is located at
- Lucknow
  - Kolkata
  - New Delhi
  - Bangalore
42. What is the source of a resin (Canada balsam) used for making of permanent slides?
- Pinus*
  - Araucaria*
  - Abies*
  - Juniperus*
43. The Silent valley of Kerala is known for it's
- Useful plants
  - Natural rain forests of rich biodiversity with a lot of unknown flora and fauna
  - Rare microorganisms, plants and animals about which we do not know
  - Aesthetic values
44. What is autecology?
- Study of biotic component
  - Study of plant community
  - Study of plant population
  - Study of individual plant
45. Endosperm development is absent in which family?
- Lamiaceae
  - Santalaceae
  - Ranunculaceae
  - Trapaceae

46. Which family produce composite type of endosperm?
- Loranthaceae
  - Caryophyllaceae
  - Poaceae
  - Asteraceae
47. Find the correct match
- Mustard plant : leaves are opposite
  - Guava plant : Leaves are alternate
  - Calotropis plant : Leaves are alternate
  - Nerium plant : Leaves are whorled
48. Winged seeds observed in which plant?
- Argemone*
  - Calotropis*
  - Orchids
  - Oroxylon*
49. Origin of Angiosperms takes place during which period/geological time scale?
- Mesozoic era
  - Archeozoic era
  - Coenozoic era
  - Perozoic era
50. Name the total root parasite?
- Striga* on *Sorghum*
  - Orobanche* on solanaceous crops
  - Sapria* and *Rafflesia* on trees
  - All the above
51. *Wolffia*, one of smallest angiosperm is mainly characterised by it's
- Cluster of leaves
  - No flower
  - Bladder
  - Roots
52. What is taxon?
- Taxonomic unit of any rank
  - Short term for taxonomy
  - A group of species
  - A compendium of international rules of nomenclature
53. Who proposed telome theory?
- Campbell
  - Zimmerman
  - Andrews
  - Bower



54. When a part of fungal mycelium is used in the development of reproductive structure, the organism is called
- Ascarpic
  - Holocarpic
  - Eucarpic
  - None of these
55. What is the source of riboflavin?
- Torulopsis*
  - Saccharomyces* yeast
  - Ashby yeast
  - All yeasts
56. Multicellular spore like bodies with thick walls produced by some blue green/Cyanophycean algae are called as
- Monospores
  - Nannocytes
  - Tetraspores
  - Hormospores
57. Name the type of lichens appeared first on the bare rocks?
- Foliose
  - Fruticose
  - Crustose
  - (a) and (b)
58. Which one of the following algal group shows best origin and evolution of sex?
- Blue green algae
  - Brown algae
  - Red algae
  - Green algae
59. A vessel-less piece of stem with prominent sieve tubes may belong to
- Pinus*
  - Trochodendron*
  - Eucalyptus*
  - Grass
60. Which one of the following cell types always divides by anticlinal cell division
- Fusiform initial cells
  - Phellogen
  - Root cap cells
  - Protoderm cells

61. Name the cell division inhibitors?
- Colchicines
  - Cyanides and azides
  - Chalones and UV-rays
  - All the above
62. The concept given by Danielli & Davson about the structure of plasma-membrane is known as
- Unit membrane concept
  - Sandwich model
  - Fluid mosaic model
  - Lipid model
63. Ephedrine, the phytochemical is used to cure
- Respiratory disorders
  - Asthma
  - Cold and cough
  - All the above
64. The range of biomagnifications of DDT in an aquatic food chain, if starting from 0.003ppm level in water may go at fish eating bird level upto
- 0.5ppm
  - 5.0ppm
  - 15.0ppm
  - 25.0ppm
65. Sago of commerce is obtained from which plant?
- Calamus rotung*
  - Areca catechu*
  - Phoenix dactylifera*
  - Metroxylon sagu*
66. A plant breeder wants to develop a disease resistant variety, what is the first step he should take?
- Hybridization
  - Selection
  - Mutation
  - Production of crop
67. A variety of strain developed by agricultural/ horticultural techniques and usually not found in natural population is known as
- Cultivar
  - Hybrid
  - Tissue culture
  - GMO

68. Yeast cell can progress through the cell cycle in about
- 30 minutes
  - 60 minutes
  - 90 minutes
  - 120 minutes
69. The Fuchsin negative achromatic area of a chromosome is known as
- Centromere
  - Centriole
  - Centrosome
  - Chromomere
70. If a red flowered plant is crossed to a white flowered plant, the hybrid is red flowered. Next the F<sub>1</sub> hybrid is cross pollinated to a white flowered plant, what will be the percentage of white flowered plants in the progeny?
- 25%
  - 50%
  - 75%
  - 100%
71. Epistasis was studied by Bateson in which plant?
- Pisum sativum* (garden pea)
  - Mirabilis jalapa* (4O'clock plant)
  - Antirrhinum crontium* (Snapdragon)
  - Lathyrus odoratus* (sweet pea)
72. RNA interference is essential for the
- Cell proliferation
  - Cell defense
  - Cell differentiation
  - Micropropagation
73. When a pyrimidine base is replaced by a purine or vice-versa in the DNA is called as
- Inversion
  - Transition
  - Transfection
  - Transversion
74. Nullisomy is represented by
- $2n+1$
  - $2n-1$
  - $2n+2$
  - $2n-2$

75. What is the ploidy level of *Triticum aestivum*?
- Diploid
  - Haploid
  - Hexaploid
  - Heteropolyploid
76. Apomictic embryos in *Citrus* arise from
- Synergids
  - Antipodal cells
  - Maternal sporophytic tissue in ovule
  - Diploid egg
77. Southern blotting is used in molecular probing of
- RNA
  - DNA
  - Proteins
  - Amino acids
78. Polynucleotide chain can be hydrolysed by the enzymes called
- Polymerases
  - Nucleases
  - Proteases
  - Ligases
79. Amplification of gene of interest by using DNA polymerase may go up to
- 0.1million times
  - 1.0million times
  - 1.0 trillion times
  - 1.0 billion times
80. Nucleic acids strongly absorb UV light at
- 250 nm
  - 260 nm
  - 270 nm
  - 300 nm
81. Choose the correct pair among these
- |   |   |
|---|---|
| A. Insulin purification   | i. Ion exchange chromatography          |
| B. Amino acid separators  | ii. Thin layer and paper chromatography |
| C. Enzymes and immunoglobulins separation                       | iii. Affinity chromatography            |
| D. Separation and determination of molecular weight of proteins | iv. Gel filtration chromatography       |

- a. A-i, B-ii, C-iii, D-iv
  - b. A-i, B-iv, C-iii, D-ii
  - c. A-ii, B-i, C-iii, D-iv
  - d. A-ii, B-iv, C-i, D-iii
82. Lac Operon model is an example of
- a. Anabolic pathway
  - b. Regulation pathway
  - c. Catabolic pathway
  - d. Termination pathway
83. Lipase enzyme acting on fats by breaking down of
- a. Peptide bond
  - b. Hydrogen bond
  - c. Ester bond
  - d. Glycosidic bond
84. The 18 carbon unsaturated fatty acid with three double bonds is
- a. Oleic acid
  - b. Linoleic acid
  - c. Arachidonic acid
  - d. Linolenic acid
85. Based on Ramachandran plot, it can be said that
- a. Right handed  $\alpha$  helix cannot occur
  - b. Right handed  $\beta$  helix cannot occur
  - c. Left handed  $\beta$  helix cannot occur
  - d. Left handed  $\alpha$  helix cannot occur
86. The activity of hydrolases during seed germination is controlled by gibberellic, it is released by
- a. Vacuoles
  - b. Aleurone layer
  - c. Spherosomes
  - d. Lysosomes
87. What is the intermediate compound that connects glycolysis and Krebs's cycle?
- a. Oxalic acid
  - b. Acetyl Co-A
  - c. Pyruvic acid
  - d. Citric acid
88. Plastochron is related to
- a. Leaf development
  - b. Shoot development
  - c. Root development
  - d. Leaf arrangement

89. Water logging condition of soil makes it physiologically dry because

- a. This condition does not allow oxygen to enter the soil
- b. This condition does not allow the capillary force to work
- c. Both (a) and (b)
- d. None of these

90. The Genotype – phenotype concept was given by

- a. Charles Darwin
- b. Mendel
- c. Bateson
- d. Wilhelm Johannsen