

**UNIVERSITY OF CALICUT
DEPARTMENT OF BOTANY**

Entrance Examination for Admission to M. Phil. in Botany – Model Question Paper

Register No.	Marks Awarded:
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Time: 2Hours

Max Marks 100

This Question Booklet should be tied along with the Answer Booklet

PART I

Attempt **all** questions. Put a $\sqrt{\quad}$ mark after correct answer. No negative marks. All questions carry **1** mark each.

1. The ability of component cells of a callus to form a whole plant is called

a) Redifferentiation <input type="checkbox"/>	c) Differentiation <input type="checkbox"/>
b) Dedifferentiation <input type="checkbox"/>	d) None of the above <input type="checkbox"/>
2. Physiological dryness is faced by

a) Pond plants <input type="checkbox"/>	c) Epiphytes <input type="checkbox"/>
b) Bog plants <input type="checkbox"/>	d) Desert plants <input type="checkbox"/>
3. All of the following obeys Gregor Mendel's laws, except

a) Independant Assortment <input type="checkbox"/>	c) Linkage <input type="checkbox"/>
b) Dominance <input type="checkbox"/>	d) Purity of gametes <input type="checkbox"/>
4. When is electrophoresis not used?

a) Separation of proteins <input type="checkbox"/>	c) Separation of lipids <input type="checkbox"/>
b) Separation of aminoacids <input type="checkbox"/>	d) Separation of nucleic acids <input type="checkbox"/>
5. Pollination, where pollen grains are transferred from anther to stigma of the same plant is

a)Autogamy <input type="checkbox"/>	c)Geitonogamy <input type="checkbox"/>
b)Xenogamy <input type="checkbox"/>	d) None of these <input type="checkbox"/>
6. Gram staining was developed by

a) Christian Gram <input type="checkbox"/>	c) Louis Pasteur <input type="checkbox"/>
b) Robert Koch <input type="checkbox"/>	d) Gerald Gram <input type="checkbox"/>
7. A fungus that exhibits alternation of generation

a) <i>Puccinia</i> <input type="checkbox"/>	c) <i>Allomyces</i> <input type="checkbox"/>
b) <i>Neocallimastix</i> <input type="checkbox"/>	d) <i>Agaricus</i> <input type="checkbox"/>
8. Which are the most primitive group of algae

a)Blue green algae <input type="checkbox"/>	c)Brown algae <input type="checkbox"/>
b)Red algae <input type="checkbox"/>	d)Green algae <input type="checkbox"/>
9. Intercalary meritem results in

a) secondary growth <input type="checkbox"/>	c) primary growth <input type="checkbox"/>
b) apical growth <input type="checkbox"/>	d) none of the above <input type="checkbox"/>
10. Who discovered recombinant DNA technology

a) Stanley Cohen & Herbert Boyer <input type="checkbox"/>	c) J. D. Watson <input type="checkbox"/>
b) Har Gobind Khorana <input type="checkbox"/>	d) Sutton & Boveri <input type="checkbox"/>

11. Organisms inhabiting a common environment belong to the same
- | | | | |
|--------------|--------------------------|---------------|--------------------------|
| a) Community | <input type="checkbox"/> | c) Genus | <input type="checkbox"/> |
| b) Species | <input type="checkbox"/> | d) Population | <input type="checkbox"/> |
12. Prothallus represents
- | | | | |
|---------------------------------|--------------------------|---------------------------------|--------------------------|
| a) Gametophytic phase in a fern | <input type="checkbox"/> | c) Gametophyte in a gymnosperm | <input type="checkbox"/> |
| b) Sporophytic phase in a fern | <input type="checkbox"/> | d) Gametophyte in an angiosperm | <input type="checkbox"/> |
13. Which among the following exhibit seismonastic movement
- | | | | |
|------------------------------|--------------------------|-------------------------|--------------------------|
| a) <i>Enterolobium saman</i> | <input type="checkbox"/> | c) <i>Mimosa pudica</i> | <input type="checkbox"/> |
| b) <i>Phaseolus vulgaris</i> | <input type="checkbox"/> | d) None of these | <input type="checkbox"/> |
14. Out of the 4 widely known systems of classification which one remains less phylogenetic & more natural?
- | | | | |
|----------------------|--------------------------|-----------------------|--------------------------|
| a) Engler and Prantl | <input type="checkbox"/> | c) Rendle | <input type="checkbox"/> |
| b) Hutchinson | <input type="checkbox"/> | d) Bentham and Hooker | <input type="checkbox"/> |
15. The sectioning of woody plant materials is made through?
- | | | | |
|---------------------|--------------------------|----------------------|--------------------------|
| a) Rotary microtome | <input type="checkbox"/> | c) Cryotome | <input type="checkbox"/> |
| b) Sledge microtome | <input type="checkbox"/> | d) Rocking microtome | <input type="checkbox"/> |
16. Blue Litmus is obtained from the lichen
- | | | | |
|--------------------|--------------------------|--------------------|--------------------------|
| a) <i>Parmelia</i> | <input type="checkbox"/> | c) <i>Rocella</i> | <input type="checkbox"/> |
| b) <i>Usnea</i> | <input type="checkbox"/> | d) <i>Cladonia</i> | <input type="checkbox"/> |
17. During cell cycle DNA replication takes place in
- | | | | |
|-------------|--------------------------|-------------|--------------------------|
| a) G1 phase | <input type="checkbox"/> | c) S-phase | <input type="checkbox"/> |
| b) G2 phase | <input type="checkbox"/> | d) Prophase | <input type="checkbox"/> |
18. Exclusion of plant disease by legislation is known as
- | | | | |
|-----------------------|--------------------------|--------------------------------|--------------------------|
| a) Disease resistance | <input type="checkbox"/> | c) Biological control of plant | <input type="checkbox"/> |
| b) Plant quarantine | <input type="checkbox"/> | d) Cultural control | <input type="checkbox"/> |
19. Name the gene that has been incorporated in 'golden' rice
- | | | | |
|-------------|--------------------------|-----------------------|--------------------------|
| a) Bt gene | <input type="checkbox"/> | c) nod gene | <input type="checkbox"/> |
| b) nif gene | <input type="checkbox"/> | d) Beta carotene gene | <input type="checkbox"/> |
20. When is Earth Day celebrated?
- | | | | |
|---------------------------|--------------------------|-------------------------|--------------------------|
| a) 22 nd April | <input type="checkbox"/> | c) 22 nd May | <input type="checkbox"/> |
| b) 21 st March | <input type="checkbox"/> | d) 21 st May | <input type="checkbox"/> |
21. Which of the following vitamins has cobalt as a constituent?
- | | | | |
|---------------------------|--------------------------|----------------------------|--------------------------|
| a) Vitamin B ₁ | <input type="checkbox"/> | c) Vitamin B ₆ | <input type="checkbox"/> |
| b) Vitamin B ₂ | <input type="checkbox"/> | d) Vitamin B ₁₂ | <input type="checkbox"/> |
22. The plant for the source of the drug, Quinine is
- | | | | |
|--------------------|--------------------------|------------------|--------------------------|
| a) <i>Cinchona</i> | <input type="checkbox"/> | c) <i>Atropa</i> | <input type="checkbox"/> |
| b) <i>Ephedra</i> | <input type="checkbox"/> | d) None of these | <input type="checkbox"/> |
23. Which is the database that provides comprehensive information on mammalian microRNAs?
- | | | | |
|--------------|--------------------------|------------------|--------------------------|
| a) Argonaute | <input type="checkbox"/> | c) tRNADB | <input type="checkbox"/> |
| b) RDP | <input type="checkbox"/> | d) None of these | <input type="checkbox"/> |
24. Who coined the term Linkage
- | | | | |
|------------------|--------------------------|------------------|--------------------------|
| a) Gregor Mendel | <input type="checkbox"/> | c) T. H. Morgan | <input type="checkbox"/> |
| b) Carl Correns | <input type="checkbox"/> | d) Hugo de Vries | <input type="checkbox"/> |
25. Fungi which can grow only on living host plants are called
- | | | | |
|--------------------------|--------------------------|-----------------------|--------------------------|
| a) Obligate saprophytes | <input type="checkbox"/> | c) Obligate parasites | <input type="checkbox"/> |
| b) Facultative parasites | <input type="checkbox"/> | d) Saprophytes | <input type="checkbox"/> |

26. Which algae is responsible for the red color of red sea
- | | | | |
|-----------------------------------|--------------------------|------------------------------------|--------------------------|
| a) <i>Chlamydomonas braunii</i> | <input type="checkbox"/> | c) <i>Trichodesmium erythraeum</i> | <input type="checkbox"/> |
| b) <i>Pleurothallis erythrium</i> | <input type="checkbox"/> | d) <i>Ulothrix zonata</i> | <input type="checkbox"/> |
27. For union between stock and scion in grafting which one is the first to occur
- | | | | |
|--|--------------------------|---------------------------------------|--------------------------|
| a) Production of plasmodesmata | <input type="checkbox"/> | c) Formation of callus | <input type="checkbox"/> |
| b) Differentiation of new vascular tissues | <input type="checkbox"/> | d) Regeneration of cortex & epidermis | <input type="checkbox"/> |
28. Introduction of recombinant DNA into a cell using electrical impulse is called
- | | | | |
|--------------------|--------------------------|----------------------|--------------------------|
| a) Electroporation | <input type="checkbox"/> | c) Biolistics | <input type="checkbox"/> |
| b) Transduction | <input type="checkbox"/> | d) None of the above | <input type="checkbox"/> |
29. MAB stands for
- | | | | |
|----------------------------------|--------------------------|------------------------------|--------------------------|
| a) Man and Biosphere | <input type="checkbox"/> | c) Man and biotic community | <input type="checkbox"/> |
| b) Man, antibiotics and bacteria | <input type="checkbox"/> | d) Mayer, Anderson and Bisby | <input type="checkbox"/> |
30. To which group would you assign a plant which produces spores and embryos, but lacks seed and vasculature
- | | | | |
|----------|--------------------------|-----------------|--------------------------|
| a) Algae | <input type="checkbox"/> | c) Bryophyte | <input type="checkbox"/> |
| b) Fungi | <input type="checkbox"/> | d) Pteridophyte | <input type="checkbox"/> |
31. One of the methods of breaking dormancy is
- | | | | |
|-----------------------------|--------------------------|--------------------|--------------------------|
| a) Mechanical scarification | <input type="checkbox"/> | c) Etiolation | <input type="checkbox"/> |
| b) Vernalization | <input type="checkbox"/> | d) Phosphorylation | <input type="checkbox"/> |
32. A synonym is
- | | | | |
|----------------------------------|--------------------------|------------------------------------|--------------------------|
| a) a correct name of a species | <input type="checkbox"/> | c) a superfluous name of a species | <input type="checkbox"/> |
| b) a duplicate name of a species | <input type="checkbox"/> | d) an incorrect name of a species | <input type="checkbox"/> |
33. Carnoy's solution is a mixture of
- | | | | |
|--|--------------------------|---|--------------------------|
| a) Et OH, glacial acetic acid & formalin | <input type="checkbox"/> | c) Et OH, glacial acetic acid & distilled water | <input type="checkbox"/> |
| b) Et OH, glacial acetic acid & chloroform | <input type="checkbox"/> | d) Chromic acid & glacial acetic acid | <input type="checkbox"/> |
34. In which of the following feature angiosperm resemble gymnosperm
- | | | | |
|-----------------------|--------------------------|--------------------------|--------------------------|
| a) Presence of ovules | <input type="checkbox"/> | c) Nature of endosperm | <input type="checkbox"/> |
| b) presence of vessel | <input type="checkbox"/> | d) Mode of fertilization | <input type="checkbox"/> |
35. Who is regarded as the father of Microbiology
- | | | | |
|----------------|--------------------------|------------------|--------------------------|
| a) Leeuwenhoek | <input type="checkbox"/> | c) Louis Pasteur | <input type="checkbox"/> |
| b) Robert Koch | <input type="checkbox"/> | d) Robert Hook | <input type="checkbox"/> |
36. Karyokinesis means division of
- | | | | |
|--------------|--------------------------|------------------|--------------------------|
| a) Nucleus | <input type="checkbox"/> | c) Protoplasm | <input type="checkbox"/> |
| b) Cytoplasm | <input type="checkbox"/> | d) None of these | <input type="checkbox"/> |
37. In angiosperm, the endosperm is
- | | | | |
|------------|--------------------------|---------------|--------------------------|
| a) Haploid | <input type="checkbox"/> | c) Triploid | <input type="checkbox"/> |
| b) Diploid | <input type="checkbox"/> | d) Tetraploid | <input type="checkbox"/> |
38. Which of these are most widely used in genetic engineering?
- | | | | |
|-----------------|--------------------------|-------------|--------------------------|
| a) Plastid | <input type="checkbox"/> | c) Plasmid | <input type="checkbox"/> |
| b) Mitochondria | <input type="checkbox"/> | d) Ribosome | <input type="checkbox"/> |
39. A virion is
- | | | | |
|-------------------------------------|--------------------------|------------------------------|--------------------------|
| a) A complete inert form of a virus | <input type="checkbox"/> | c) Parasitic form of a virus | <input type="checkbox"/> |
| b) Active virus | <input type="checkbox"/> | d) None of these | <input type="checkbox"/> |
40. Down's syndrome is caused by
- | | | | |
|---|--------------------------|--|--------------------------|
| a) Trisomy of 22 nd chromosome | <input type="checkbox"/> | c) Monosomy of 22 nd chromosome | <input type="checkbox"/> |
| b) Trisomy of 21 st chromosome | <input type="checkbox"/> | d) Monosomy of 21 st chromosome | <input type="checkbox"/> |

41. The probability distribution used to depict the occurrence of events in a large number of independent repeated trials was described by
- a) Carl Pearson c) S. D. Poisson
 b) Daniel Bernoulli d) None of these
42. Which of the following is not a mutagen
- a) EMS c) Nitrous acid
 b) Acetic acid d) Ethylene oxide
43. The irrigation technique mimicking rain is
- a) Surface irrigation c) Sprinkler irrigation
 b) Drip irrigation d) None of these
44. Cause of speciation is
- a) Random mating c) Isolation
 b) Hybridization d) Migration
45. An ethnobotanical plant
- a) *Oryzasativa* c) *Gloriosa superba*
 b) *Artocarpus integrifolia* d) *Bombax mori*
46. Which among the following is the transport form of sugar?
- a) Glucose c) Lactose
 b) Sucrose d) Fructose
47. Which among the following do not possess corm
- a) *Garlic* c) *Colocasia*
 b) *Amorphophalus* d) *Gladiolus*
48. Taq polymerase is used because of its
- a) High thermal stability c) High fidelity
 b) Low thermal stability d) High speed
49. The nomenclature for the stem of a fossil form genus is
- a) Dendron c) Xylon
 b) Phyllum d) Carpon
50. Variable Number of Tandem Repeats (VNTRs) in the DNA molecule are highly useful in
- a) Recombinant DNA technology c) DNA finger printing
 b) Monoclonal antibody production d) Stem cell culture

50x1= 50 marks

PART II

Attempt **all** questions. All questions carry **5** marks each.

51. Enumerate the major changes made in Melbourne code.
52. Give an account of vegetative incompatibility in fungi.
53. Differentiate between regression analysis and correlation analysis.
54. Describe the various inhibitors of mitochondrial and thylakoid electron transport systems.
55. Explain two important transgenic modifications used in horticulture.
56. Describe various blotting techniques and their significance.

57. Differentiate between independent assortment and linkage.
58. What are living fossils? Mention their features and give examples from each group.
59. Describe cell cycle and its regulation.
60. Explain the uses of BLAST programme in elucidating phylogenetic relationships.

10x5= 50 marks