

Code No.

R – 2107

**Entrance Examination for Admission to the P.G. Courses in the
Teaching Departments, 2023**

CSS

BOTANY WITH SPECIALIZATION IN BIODIVERSITY CONSERVATION

General Instructions

1. The Question Paper is having 100 Objective Questions, each carrying one mark.
2. The answers are to be (✓) 'tick marked' **only** in the "**Response Sheet**" provided.
3. **Negative marking** : **0.25 marks** will be deducted for each wrong answer .

Time : 2 Hours

Max. Marks : 100

To be filled in by the Candidate									
Register Number	in Figures								
	in words								

Choose appropriate answer from the options in the questions.

(100 × 1 = 100 marks)

1. Star shaped chloroplast is seen in
 - a) Ulothrix
 - b) Zygnema
 - c) Volvox
 - d) Chlorella

DO NOT WRITE HERE

2. Phycoerythrin is found in

- | | |
|-----------------|------------------|
| a) Phaeophyceae | b) Chlorophyceae |
| c) Rhodophyceae | d) Xanthophyceae |

3. Mannitol is the reserved food material in

- | | |
|---------------------|----------------|
| a) Red algae | b) Green algae |
| c) Blue green algae | d) Brown algae |

4. Find the incorrect pair

a) Chlorella-Space algae	b) Volvox-Colonial algae
c) Dictyota-Brown algae	d) Sargassum-Agar

5. Consider the following statements. Which one is incorrectly matched?

a) Zygomycotina - Rhizopus	b) Basidiomycotina - Puccinia
c) Deuteromycotina - Cercospora	d) Ascomycotina – Slime mold

6. Find the incorrect pair

a) Usnea - Foliose lichen	b) Parmelia – Foliose lichen
c) Cladonia – Fruticose lichen	d) Cetraria – Foliose lichen

7. Leaf rust in wheat is caused by

a) Puccinia	b) Xylaria
c) Aspergillus	d) Albugo

8. Rice blast is caused by

a) Virus	b) Fungus
c) Algae	d) Mycoplasma

9. Which one is known as bread mould?

a) Yeast	b) Rhizopus
c) Albugo	d) Mucor

10. Red tide is caused by which algae

a) Sargassum	b) Rhodella
c) Gracillaria	d) Gonyaulax

11. Which of the following is known as peat moss?

a) Riccia	b) Marchantia
c) Funaria	d) Sphagnum

12. Pseudoelators are present in
- a) Anthoceros
 - b) Moss
 - c) Riccia
 - d) All of the above
13. Which of the following is known as maidenhair fern?
- a) Cyathea
 - b) Pteris
 - c) Adiantum
 - d) *Marselia*
14. Phloem of pteridophytes lack
- a) Bast fibres
 - b) Companion cells
 - c) Phloem parenchyma
 - d) Sieve cells
15. Consider the following statements
- i. Selaginella is heterosporous
 - ii. pteridophyte is a vascular cryptogame
 - iii. In pteridophytes reduction division occurs during prothallus formation
 - iv. Angiopteris is known as royal fern
- Which of the combinations are correct?
- a) i, ii and iii
 - b) i, ii and iv
 - c) ii, iii and iv
 - d) i and ii
16. The primitive type of stele present in pteridophyte is
- a) Protostele
 - b) Plectostele
 - c) stenostele
 - d) dictyostele
17. Pick the pair that is incorrectly matched
- a) Sago palm-Salvinia
 - b) Mycorrhizal association-Pinus
 - c) Smallest gymnosperm-*Zamia pygmaea*
 - d) Connecting link between gymnosperm and angiosperm-Gnetum

18. Angiosperms originated in which period
- a) Carboniferous period b) Jurassic period
c) Silurian period d) Cretaceous period
19. Lepidodendron is a
- a) Fossil algae b) Fossil pteridophyte
c) Fossil gymnosperm d) Fossil bryophyte
20. Find the incorrect pair
- a) Cyathea-Tree fern b) Sulphur shower-ephedra
c) Circinate venation-cycas d) Anthoceros-hornwort
21. Match the following :
- | | |
|-----------|---|
| A. spike | P. Axis not elongated. All the flowers are placed almost at the same level, the lower flowers having longer pedicels. |
| B. spadix | Q. The axis is thin and weak. These are unisexual inflorescences and usually deciduous |
| C. catkin | R. Rachis is thick and fleshy and the flowers are covered by one or more spathy bracts |
| D. corymb | S. Axis is suppressed and the flowers usually have pedicels equal in length, forming a cluster |
| E. Umbel | T. Like a raceme but flowers are without stalk |
- a) A-Q B-P C-R D-S E-T b) A-T B-R C-Q D-P E-S
c) A-T B-R C-P D-Q E-S d) A-S B-Q C-R D-P E-T
22. The side of the flower facing the mother axis is called _____ While drawing floral diagram this area is represented as
- a) Posterior, dot b) Anterior, dot
c) Posterior, arrow head d) Anterior, arrow head

23. Which of the following combination of statement is CORRECT for Bentham and Hooker system of classification?

- A. It is a natural system of classification
- B. It is a phylogenetic system of classification
- C. The phanerogams were divided into three classes — Dicotyledonae, Gymnospermae and Monochlamydeae
- D. The class Dicotyledonae is further divided into three sub classes namely, Polypetalae, Gamopetalae and monochlamydeae
- E. The class monocotyledonae is further divided into sub-class as polypetalous, gamopetalous and monochlamydeae
- F. The gamaopetalae is divided into Thalamiflorae, Disciflorae and Calyciflorae

Choose the CORRECT combination of statements :

- | | |
|---------|---------|
| a) ACDF | b) BCD |
| c) ACD | d) ACEF |

24. Choose the correct order of taxonomic hierarchy

- a) Division – class – order – family – tribe – genus – species
- b) Domain – Kingdom – Phylum – order – class – tribe – family – genus species
- c) Kingdom – class – order – division – family – genus – species
- d) Domain – kingdom – division – class – order – family – tribe – genus – species

25. Which of the following correctly explains a lectotype?

- a) It is a specimen or other element selected from the original material to serve as a nomenclatural type when no holotype was designated at the time of publication or as long as it is missing
- b) It is a specimen or other element selected to serve as nomenclatural type as long as all of the material on which the name of the taxon was based is missing
- c) It is one of the two or more specimens cited by an author of a species when no holotype was designated, or it is any one of the two or more specimens originally designated as types
- d) It refers to the specimen collected from the same locality from where the holotype was collected

26. Which of the following is a national herbaria?
- a) Andaman and Nicobar Regional Centre, BSI, Port Blair
 - b) Central National Herbarium, Howrah
 - c) Malabar Botanical Herbarium, Calicut
 - d) Tamil Nadu Agricultural University Herbarium, Coimbatore
27. Presence of obdiplostemonous stamen is the characteristic feature of
- a) Annonaceae
 - b) Anacardiaceae
 - c) Rubiaceae
 - d) Rutaceae
28. Choose the CORRECT option from the following statement about gynandrous condition
- a) The structure formed by the fusion of the stamens and the stigmatic region of the gynoecium is called as gynostegium
 - b) The structure formed by the fusion of the stamens and the stigmatic region of the gynoecium is called as gynostemium
 - c) The column formed by the union of androecium and gynoecium is called as gynostegium
 - d) The anthers of the filaments are fused to form the tubular mass or group and their filaments remain free
29. The part of the coconut from which coir is made
- a) Endocarp
 - b) Epicarp
 - c) Mesocarp
 - d) Seed coat fiber
30. The source of gingelly oil (til) is
- a) Ground nut
 - b) Canola
 - c) Flax
 - d) Sesame

34. Which of the following statement is correct about island biogeography?
- a) An island near the mainland will have a lower immigration rate than an island far from the mainland
 - b) A small island will have a higher extinction rate than a large island
 - c) The equilibrium point is highest for a small island that is near the mainland
 - d) the smaller the conserved area, the better the chance of preserving more species
35. Which of the following statements on interaction and expected outcomes of this interaction is INCORRECT?
- a) In parasitism, abundance of parasite increases and abundance of host decreases
 - b) In commensalism, abundance of one species increases, and the other is not affected
 - c) In mutualism, abundance of both species increases
 - d) In commensalism abundance of one species increases, and the other decreases
36. Which of the following is INCORRECT on ecological niche?
- a) The ecological niche is the role a species plays in its community, including its habitat and its interactions with other organisms
 - b) The fundamental niche comprises all the abiotic conditions under which a species could survive when adverse biotic conditions are absent
 - c) A species realized niche tends to be larger than its fundamental niche
 - d) The realized niche comprises those conditions under which a species does survive when adverse biotic interactions, such as competition and predation, are present
37. The most poisonous gas released during the burning of plastic waste at Brahmapuram Ernakulam, India
- a) Dioxin
 - b) Furans
 - c) Polychlorinated biphenyls
 - d) Carbon monoxide

38. Which of the following is INCORRECT on edge effect?
- Edge effects can significantly degrade a population's chances of survival
 - Changes in microclimate (temperature, wind, humidity, etc.) near the edge may reduce appropriate habitat for many species more than the physical fragmentation suggests
 - In isolated fragments of rain forest, for example, trees on the edge are exposed to direct sunlight and, consequently, hotter and drier conditions than they are accustomed to in the cool, moist forest interior
 - An edge increases the amount of habitat typical of an ecosystem because the edges around a patch have a habitat slightly different from the interior of the patch
39. Which of the following statements are CORRECT on a selected population
- Age at first reproduction — Late
 - Mortality rate — High
 - Life span — High
 - Number of offspring produced per reproductive episode — Many
 - Number of reproductions per lifetime — Usually one
 - Parental care — None
- i, ii, v, vi
 - ii, iv, v, vi
 - ii, iii, v, vi
 - i, ii, iv, vi
40. The forest conservation act of India was implemented in the year
- 1980
 - 1986
 - 1981
 - 1972
41. Where is the presence of passage cells?
- Epidermis
 - Pericycle
 - Endodermis
 - Phloem

42. Floridean starch is the reserve Food in
- a) Chlorophyceae
 - b) Xanthophyceae
 - c) Cyanophyceae
 - d) Rhodophyceae
43. Bulliform cells are seen in
- a) Nymphaea
 - b) Sorghum
 - c) Ficus
 - d) Brassica
44. Intine is made up of
- a) Sporopollenin
 - b) Peptidoglycan
 - c) Pectin
 - d) Cellulose
45. Which of the statements is false regarding to non-living inclusions of cell?
- a. Metabolic by-products
 - b. Also known as non-protoplasmic inclusions
 - c. ER and Mitochondria belong to non-living inclusions
 - d. Nucleus and Chloroplast not belong to non-living inclusions
46. Which of the following structure is more similar to Gap junction in plant cell?
- a) Endoplasmic reticulum
 - b) Desmosomes
 - c) Tight Junctions
 - d) Plasmodesma
47. Anomalous secondary growth in Dracaena stem is
- a) Abnormal growth from abnormal cambium in monocot
 - b) Abnormal growth from abnormal cambium in dicot
 - c) Abnormal growth from normal cambium in dicot
 - d) Abnormal growth from normal cambium in monocot
48. Which of the statements is false regarding polygonum type embryo sac?
- a) Three antipodal cells located at chalazal end
 - b) Three synergid cells located in micropylar end
 - c) Binucleated central cell in the middle
 - d) Two polar nuclei in the middle

49. Which of the following events leads to double fertilization?
- a) Pollen tube penetrates at micropyle end – pollen tube growth stops inside antipodal cells – one sperm cell fuses with egg and other with central cell
 - b) Pollen tube penetrates at chalazal end – pollen tube growth stops inside antipodal cells – one sperm cell fuses with egg and other with central cell
 - c) Pollen tube penetrates at chalazal end – pollen tube growth stops inside synergid cells – one sperm cell fuses with egg and other with central cell
 - d) Pollen tube penetrates at micropyle end – pollen tube growth stops inside synergid cells – one sperm cell fuses with egg and other with central cell
50. Which is the more correct statement?
- a) Exine is the inner layer of pollen
 - b) Exine is made of sporopollenin
 - c) Exine is differentiated into outer nexine and inner sexine
 - d) Exine is covered by paracellulose
51. Carboxyl methyl cellulose which having negative charge is used in
- a) Anion exchange chromatography
 - b) Cation exchange chromatography
 - c) Gel filtration chromatography
 - d) Size exclusion chromatography
52. Isoelectric focusing is associated with
- a) Western blotting
 - b) 2-D gel electrophoresis
 - c) Affinity chromatography
 - d) Ion exchange chromatography
53. An equilibrium between a liquid phase trapped inside the pores of stationary porous structure and a mobile liquid phase is called
- a) Adsorption chromatography
 - b) Partition chromatography
 - c) Gel chromatography
 - d) Ion-exchange chromatography

54. Empiricism is
- a) Related to mental processes and organizing principles
 - b) Mathematics is an example of empiricism
 - c) knowledge that is derived from reason and logic
 - d) Experimental Science is an example of empiricism
55. Binomial distribution can't describe the behaviour of a count variable X
- a) The number of observations n is not fixed
 - b) Each observation is independent
 - c) Each observation represents one of two outcomes ("success" or "failure")
 - d) The probability of "success" p is the same for each outcome
56. Which of the following is not a whole mount method?
- a) Hygrobutol method
 - b) Dioxan method
 - c) Creosote method
 - d) Sanger method
57. Gram staining and Giemsa staining belong to
- a) Negative staining
 - b) Impregnation staining
 - c) Differential staining
 - d) None of the above
58. Which of the following statements is true about pH?
- a) pH of buffer solution depends upon concentration of strong acid
 - b) pH of buffer solution depends upon concentration of strong base
 - c) pH of buffer solution depends upon concentration of weak base
 - d) pH of buffer solution depends upon concentration of salt
59. Which of the following statements is true about colorimeter?
- a) Uses fixed wavelengths in the visible range only
 - b) Measures the absorbance of light
 - c) Wavelength selector of the colorimeter is a color filter, fixed wavelength
 - d) All the above

60. Carnoy's fluid consist of
- Absolute alcohol, chloroform
 - Absolute alcohol, glacial acetic acid
 - Absolute alcohol, chloroform, glacial acetic acid
 - Absolute alcohol, chloroform, formalin
61. Lysosomes are produced by which of the following cell organelles?
- Mitochondria
 - Endoplasmic Reticulum
 - Golgi Complex
 - Nucleus
62. Which of the following statements are correct?
- The process of repeated replication without sister chromatid separation is known as endoreduplication
 - Lampbrush chromosomes are found in the diplotene stage of prophase I and are meiotic bivalents
 - Activity of genes in polytene chromosomes is controlled by the insect steroid hormone estradiol
 - Balbiani rings are sites of particularly active RNA synthesis on the polytene chromosomes of Chironomids
 - The lampbrush chromosomes have the lateral loops that extrude from the chromomeres at certain positions
- All of these
 - A, B, C and D
 - A, B and C
 - A, B, D and E
63. Which of the following disease is sex-linked?
- Cystic fibrosis
 - Leukemia
 - Sickle cell anemia
 - Colour blindness
64. Chromosomal theory of inheritance was proposed by
- Sutton and Boveri in 1902
 - Waldeyer and Hoffmeister in 1905
 - George Beadle and Edward Tatum in 1902
 - Alfred Hershey & Martha Chase in 1905

65. Chromosome structure can be observed best during
- Anaphase
 - Metaphase
 - Telophase
 - Prophase
66. Which of the following is an example of analogous organs?
- Mouth parts of honey bee and house fly
 - Thorn of bougainvillea and tendril of cucurbitaceae
 - Human teeth and elephant tusk
 - Wings of birds and butterfly
67. Which of the following statements belong to Lamarckism?
- Evolution of life occurred due to use and disuse of organs
 - He explained it in his famous book "Philosophie Zoologique" in 1809
 - Lamarck's theory is based on three factors: new needs, acquisition of characters and inheritance of acquired characters
 - This theory is no more accepted today
- A and B only
 - B and C only
 - All except C
 - All of these
68. How many phenotypes can occur in the human blood group ABO with alleles I^A , I^B and i ?
- 3
 - 4
 - 2
 - 1
69. The ratio of inheritance of quantitative traits in the F_2 generation is
- 9:3:3:1
 - 1:4:6:4:1
 - 9:3:4
 - 1:2:1:2:4:2:1:2:1
70. In a family of six children, what is the probability that all children are of the same sex?
- $1/2$
 - $1/16$
 - $1/32$
 - $1/64$

71. In competitive inhibition
- a) K_m increases, V_{max} constant
 - b) V_{max} increases, K_m constant
 - c) K_m decreases, V_{max} constant
 - d) K_m decreases, V_{max} increases
72. Phenylalanine is produced by which one of the following pathways?
- a) Mevalonic acid pathway
 - b) Malonic acid pathway
 - c) Shikimic acid pathway
 - d) Methylerythritol pathway
73. Which one of the following is the only product in cyclic photophosphorylation?
- a) ADP
 - b) ATP
 - c) NADPH
 - d) Oxygen
74. Which amino acid is known as the 22nd amino acid?
- a) Selenocysteine
 - b) Pyrrolysine
 - c) N-formylmethionine
 - d) Threonine
75. The side chain of Histidine contain
- a) Indole ring
 - b) Phenol group
 - c) Imidazole ring
 - d) Guanidino ring
76. Number of ATP molecules required for the synthesis of a glucose molecule in Calvin-Benson cycle are
- a) 12
 - b) 16
 - c) 18
 - d) 32
77. Which of the following phytohormone promotes bolting?
- a) Gibberellic acid
 - b) Auxin
 - c) Cytokinin
 - d) Absciscic acid

78. Respiratory Quotient (R. Q.) of fats is
- 1
 - 0
 - <1
 - >1
79. Primary CO₂ acceptor in C₄ plants is
- 4 carbon compound
 - 3 carbon compound
 - 5 carbon Compound
 - 6 carbon compound
80. Which of the following element is required for nodulation in legumes?
- Zn
 - Mn
 - Fe
 - Mo
81. During the process of chain elongation during transcription, the combinational sequential attack which occurs during the addition of an incoming nucleoside triphosphate is given below
- Attack of 5' OH of the nucleotide at the beginning of the parent strand with the 5' β -phosphate of the incoming nucleoside triphosphate.
 - The orthophosphate generated is subsequently cleaved.
 - The pyrophosphate generated is subsequently released.
 - Attack of 3' OH of the nucleotide at the end of the growing strand on the 5' α -phosphate of the incoming nucleoside triphosphate.
- The correct combination among the four is:
- A, B and C
 - A, B and D
 - B and D
 - C and D
82. The subunits in rho proteins are _____ in number.
- Six
 - Ten
 - Eleven
 - Four
83. RNA polymerases catalyses the production of which the following given below in prokaryotes
- rRNA, tRNA
 - mRNA, rRNA
 - IncRNA, rRNA
 - tRNA, mRNA, tRNA
- The correct combination among the given option is
- A and B
 - B and C
 - D
 - C and D

89. Which of the following is an incorrect statement?
- a) Based on modified RasMol code, WebMol is a web-based software that is quite comparable to RasMol.
 - b) RasMol is completely unrelated to the web-based software WebMol.
 - c) Chime is a web browser add-on.
 - d) Chime requires a web browser to be launched because it is not a stand-alone programme.
90. For a DNA sequence with ten-nucleotide residues, there are _____ possible starting sites for a 20-residue long site.
- a) 71
 - b) 81
 - c) 59
 - d) 68
91. Which of the following soils is very hard to cultivate?
- a) Alluvial
 - b) Black
 - c) Red
 - d) Sandy
92. Air layering is also called as
- a) Gootee
 - b) Chinese layering
 - c) Pot layering
 - d) All of these
93. The method of layering in which rooting is induced at different nodes simultaneously in the soil is called as
- a) Air layering
 - b) Serpentine layering
 - c) Trench layering
 - d) Mound layering
94. What does Bonsai literally mean?
- a) Japanese art
 - b) Tree often planted in a small pot
 - c) Little tree that looks old
 - d) None of the above

95. Polyploidy is induced through
- a) Irradiation
 - b) Mutagenic chemicals
 - c) Ethylene
 - d) Colchicines
96. The quickest method of plant breeding is
- a) Mutation breeding
 - b) Introduction
 - c) Selection
 - d) Hybridization
97. Pure line breed refers to
- a) Heterozygosity only
 - b) Homozygosity only
 - c) Homozygosity and self assortment
 - d) Heterozygosity and linkage
98. The new varieties of plants are produced by
- a) Introduction and mutation
 - b) Selection and hybridization
 - c) Mutation and selection
 - d) Selection and introduction
99. Somatic hybridization is achieved through
- a) Grafting
 - b) Conjugation
 - c) Protoplast fusion
 - d) Recombinant DNA technology
100. How is random sampling useful?
- a) Reasonably accurate
 - b) An economical method of data collection
 - c) Free from personal biases
 - d) All of the above

ANSWER SHEET

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

ROUGH WORK

ROUGH WORK

ROUGH WORK