

Code No.

V – 2340

**Entrance Examination for Admission to the P.G. Courses in the
Teaching Departments, 2025**

CSS

BOTANY WITH SPECIALIZATION IN BIODIVERSITY CONSERVATION

For office use only

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								

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Choose appropriate answer from the options in the questions.

(100 × 1 = 100 marks)

1. Concept of Chipko movement originally came from?
 - A. Rajasthan
 - B. Assam
 - C. Arunachal Pradesh
 - D. Mizoram

DO NOT WRITE HERE

-
2. Which of the following is a non-renewable energy resource?
- | | |
|------------------|------------|
| A. Solar | B. Methane |
| C. Hydroelectric | D. Coal |
3. Pyramid of energy in a pond ecosystem is always:
- | | |
|-------------|--------------|
| A. Inverted | B. Upright |
| C. Linear | D. Irregular |
4. In ecological succession, the intermediate developmental phase is known by what name?
- | | |
|-------------|-----------|
| A. Ecesis | B. Climax |
| C. Nudation | D. Sere |

5. The Stockholm Convention is a global treaty to protect human health and environment from
- A. Persistent organic pollutants (POPs)
 - B. Polychlorinated biphenyls (PCBs)
 - C. Public-private partnerships (PPPs)
 - D. Standard Operating Procedures (SoPS)
6. Which of the following is an example of how invasive species can threaten biodiversity?
- A. By reducing the genetic diversity of native species
 - B. By improving soil fertility in degraded lands
 - C. By creating new ecosystems
 - D. By controlling the population of native predators
7. WWF stands for:
- A. Web World Federation
 - B. World Wildlife Federation
 - C. World Wildlife Fund
 - D. World Web Federation
8. Which of the following pollutants are most responsible for acid rain formation?
- (i) Carbon monoxide
 - (ii) Nitrogen dioxide
 - (iii) Ozone
 - (iv) Sulphur dioxide
 - (v) Lead

Choose the correct answer from the options given below:

- A. (i) and (ii) only
- B. (ii) and (iv) only
- C. (iii) and (v) only
- D. (i), (ii) and (iv) only

15. Which one of the following is a natural system of classification?
- A. Bentham and Hooker's system
 - B. Linnaeus' system
 - C. Artificial system
 - D. Numerical taxonomy
16. Which plant family does cotton belong to?
- A. Malvaceae
 - B. Poaceae
 - C. Fabaceae
 - D. Solanaceae
17. Which part of the plant is used as spice in clove?
- A. Dried flower bud
 - B. Dried flower
 - C. Dried inflorescence
 - D. Dried seed
18. Ethnobotany is the study of:
- A. Plants and their taxonomy
 - B. Plants used by indigenous people
 - C. Genetic modification of plants
 - D. Medicinal plants only
19. Which plant is known for ethnobotanical source of cardiac glycosides?
- A. *Digitalis purpurea*
 - B. *Atropa belladonna*
 - C. *Cinchona officinalis*
 - D. *Papaver somniferum*

20. Which of the following is an example of a sacred grove in India known for ethnobotanical significance?
- A. Silent Valley
 - B. Dodda Betta
 - C. Khasi Hills
 - D. Sunderbans
21. Who coined the term "chromosome"?
- A. Sutton
 - B. Hoffmeister
 - C. Waldeyer
 - D. Boveri
22. Coding regions of Eukaryotes is called
- A. Introns
 - B. Exons
 - C. Muton
 - D. None of this above
23. What does Proteomics refer to?
- A. Set of proteins in a specific region of the cell
 - B. Set of proteins
 - C. The entire set of expressed proteins in the cell
 - D. Set of Biomolecule
24. What is a BLAST search?
- A. A tool for comparing DNA or protein sequences to a database
 - B. A database of protein structures
 - C. A method for predicting protein structure
 - D. A tool for aligning protein sequences
25. Which of the following enzyme is responsible for initiating DNA replication?
- A. Polymerase
 - B. Ligase
 - C. Gyrase
 - D. Primase

26. What is the process of copying genetic information from a single strand of DNA into an RNA known as?
- A. Transcription
 - B. Reverse transcription
 - C. Translation
 - D. Reverse translation
27. What is the primary goal of bioinformatics?
- A. Develop new types of microscopes
 - B. Store and analyze biological data
 - C. Create synthetic organisms
 - D. Study planetary biology
28. What kind of data is stored in the PDB (Protein Data Bank)?
- A. DNA sequences
 - B. RNA expression data
 - C. 3D structures of proteins
 - D. Microarray data
29. What is the basic unit of DNA?
- A. Amino acid
 - B. Nucleotide
 - C. Carbohydrates
 - D. Fatty acid
30. The sugar found in RNA is
- A. Deoxyribose
 - B. Glucose
 - C. Ribose
 - D. Sucrose

31. What is the main objective of plant breeding?
- A. To produce disease-free and high-yielding varieties
 - B. To reduce the size of plants
 - C. To make plants attractive
 - D. To increase the number of plant species
32. Horticulture is the branch of agriculture that deals with:
- A. Growing cereals and pulses
 - B. Rearing animals
 - C. Cultivation of fruits, vegetables, and ornamental plants
 - D. Fishing and aquaculture
33. The term "vernalization" refers to:
- A. Induction of flowering by low temperature
 - B. Fruit induction by low temperature
 - C. Seed germination in darkness
 - D. Hardening of seedlings
34. Which breeding method is most effective for self-pollinated crops?
- A. Mass selection
 - B. Pure line selection
 - C. Synthetic selection
 - D. Recurrent selection
35. Banana is commonly propagated through:
- A. Seeds
 - B. Suckers
 - C. Grafting
 - D. Stem cuttings

36. Tissue culture is a form of:
- A. Sexual propagation
 - B. Macro propagation
 - C. Vegetative propagation
 - D. Pollination
37. The first step in the research process is:
- A. Collecting data
 - B. Defining the research problem
 - C. Writing the conclusion
 - D. Reviewing literature
38. A research hypothesis is typically:
- A. A statement that can be tested and falsified
 - B. A review of existing literature
 - C. A theoretical framework
 - D. A set of conclusions drawn after the data analysis
39. The purpose of a literature review in research methodology is to:
- A. Prove the researcher's hypothesis
 - B. Collect data for the study
 - C. Summarize the findings of previous studies and identify gaps in the literature
 - D. Design the research methodology

40. In horticulture, the term "grafting" refers to:
- A. The process of attaching a portion of one plant (scion) to another plant (rootstock)
 - B. The practice of planting seeds in the ground to produce new plants
 - C. The cross-pollination of two different species to produce hybrid plants
 - D. The selective breeding of plants to enhance certain traits
41. Nitrogen is absorbed by the plants in the form of
- A. Nitrites
 - B. Nitrates only
 - C. Ammonium only
 - D. Nitrates and Ammonium
42. In C₃ and C₄ plants primary carboxylation is catalyzed by the _____ enzymes respectively
- A. PEP carboxylase and RuBP carboxylase
 - B. RuBP carboxylase and PEP carboxylase
 - C. RuBP carboxylase and pyruvate carboxylase
 - D. PEP carboxylase and Pyruvate Carboxylase
43. Which of the following polysaccharides are connected by beta-1,4 glycosidic bond between beta D-glucose units?
- A. Starch
 - B. Cellulose
 - C. Glycogen
 - D. Chitin
44. Peroxisomes are involved in which type of physiological reaction?
- A. Calvin cycle
 - B. Bacterial photosynthesis
 - C. Glycolate cycle
 - D. Glyoxylate cycle

45. Transpiration is regulated by the movements of _____ cells.
- A. Guard cells
 - B. parenchyma cells
 - C. Epithelial cells
 - D. None of the above
46. In non-competitive inhibition of enzymes
- A. V_{max} decreases while K_m remains unchanged
 - B. V_{max} increases and K_m increases
 - C. V_{max} and K_m remains unchanged
 - D. V_{max} increases and K_m decreases.
47. Which one of the plant hormone is a gaseous hormone?
- A. Ethylene
 - B. Auxin
 - C. GA
 - D. ABA
48. Amino acids with aromatic R groups are
- A. Glycine, alanine, leucine
 - B. Phenylalanine, Tryptophan, Tyrosine
 - C. Histidine, arginine, Lysine
 - D. Threonine, cysteine, serine
49. Glycolysis takes place in
- A. Nucleus
 - B. Ribosomes
 - C. Mitochondrial matrix
 - D. Cytosol
50. In proteins amino acid units are linked by
- A. Peptide bond
 - B. Glycosidic bond
 - C. Beta glycosidic bond
 - D. Ester bond

51. Extension of endoplasmic reticulum enclosing plasmodesmata is called
- | | |
|----------------------|----------------|
| A. Cytosolic annulus | B. Desmotubule |
| C. Microchannel | D. Plasmalemma |
52. Plant secondary metabolites have the following functions except
- | |
|---------------------------------|
| A. Defense mechanism |
| B. Plant survival |
| C. Stress responses |
| D. Plant growth and development |
53. According to the Histogen theory of meristematic organization and function, shoot apex region consists of all except
- | | |
|---------------|---------------|
| A. Procambium | B. Dermatogen |
| C. Periblem | D. Plerome |
54. Study of tree rings and thereby the age of the tree is known as
- | |
|---------------------|
| A. Dendrology |
| B. Dendrochronology |
| C. Palynology |
| D. Varve chronology |
55. Find out the incorrectly matched:
- | | | |
|---------------------|---|----------------------------------|
| A. Procambium | – | fascicular cambium |
| B. Cortex | – | cork cambium |
| C. Vascular cambium | – | primary xylem and primary phloem |
| D. Cork cambium | – | periderm |

56. Which of the following applies to the anomalous secondary growth of *Boerhaavia*?

- A. Multiple rings of vascular cambium
- B. Phloem gets embedded in xylem due to cambial activity
- C. Monocot showing secondary growth
- D. Shows successive cambia

57. Types of pollination based on agents of pollination are given below

- | | | |
|------------------------|---|---------|
| (i) Hydrophily | – | wind |
| (ii) Ornithophily | – | birds |
| (iii) Cheiropterophily | – | animals |
| (iv) Entomophily | – | bees |

Which of the following shows the correct combination?

- A. Only (i)
- B. (ii) and (iv)
- C. (i), (iii) and (iv)
- D. all of the above

58. Which of the following describes callose?

- A. It is a cell wall component
- B. It is a plant reserve food material
- C. Made up of 1,4-glucan monomers
- D. Does not affect plasmodesmata permeability

59. Ballon-shaped outgrowth from the xylem of woody plants is called

- | | |
|--------------------|--------------|
| A. Lenticels | B. Rhytidome |
| C. Bulliform cells | D. Tyloses |

60. Who is known as the Father of Indian embryology?

- A. Prof. Panchanan Maheshwari
- B. Prof. Ramdeo Misra
- C. Sir Edwin John Butler
- D. Shiv Ram Kashyap

61. Match the following:

- | | |
|------------------------------|--|
| a. SEM | (i) A beam of electrons passes through the ultra-thin sample |
| b. TEM | (ii) Light from the light source and light from the structures present in the specimen forms the image |
| c. Phase contrast microscope | (iii) A beam of electrons scans the sample |
| d. Dark field microscope | (iv) A disc blocks light reaching from the objective lens |
-
- A. (a)-(iii), (b)-(i), (c)-(ii), (d)-(iv)
 - B. (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)
 - C. (a)-(i), (b)-(ii), (c)-(iii), (d)-(iv)
 - D. (a)-(iii), (b)-(i), (c)-(iv), (d)-(ii)

62. For fixation, the Carnoy's Formula does not include

- | | |
|---------------------|------------------------|
| A. Chloroform | B. Formalin |
| C. Absolute alcohol | D. Glacial acetic acid |

63. By the end of gram staining, a Gram (-) bacteria appear in

- | | |
|--------------|---------|
| A. Purple | B. Blue |
| C. No colour | D. Red |

64. Canada balsam is a
- | | |
|--------------------|-------------------|
| A. Fixation agent | B. Culture medium |
| C. Mounting medium | D. Killing agent |
65. According to Beer-Lambert law, what happens to absorbance when the concentration of the solution increases?
- | | |
|-------------------|-----------------|
| A. Decreases | B. Increases |
| C. Stays the same | D. Becomes zero |
66. Identify the incorrect match from the pairs giving various types of chromatography and their mobile phase :
- | | |
|------------------------------------|------------------------------|
| A. Thin layer chromatography | – organic solvents |
| B. Paper chromatography | – water |
| C. Column chromatography | – inert gases |
| D. High-performance chromatography | – liquid under high pressure |
67. Select the correct statements regarding a buffer:
- (i) A buffer helps enzymes to function optimally in biological systems
 - (ii) Buffers cause drug instability
 - (iii) It can decrease the shelf life of food items
 - (iv) Buffers help in better colour uptake in the textile industries
- | | |
|------------------|-------------------|
| A. (i) and (ii) | B. (ii) and (iii) |
| C. (ii) and (iv) | D. (i) and (iv) |

68. Match the following techniques with their equations :

- | | | |
|----------------------|---|--|
| a. Electrophoresis | – | (i) Distance travelled by the compound/Distance travelled by the solvent front |
| b. Spectrophotometer | – | (ii) $RCF = (RPM)^2 \times 1.118 \times 10^{-5} \times r$ |
| c. Chromatography | – | (iii) $A = \epsilon cl$ |
| d. Centrifuge | – | (iv) $\mu = v/E$ |
- A. (a)-(i), (b)-(ii), (c)-(iii), (d)-(iv)
B. (a)-(ii), (b)-(i), (c)-(iii), (d)-(iv)
C. (a)-(iv), (b)-(iii), (c)-(i), (d)-(ii)
D. (a)-(ii), (b)-(iv), (c)-(i), (d)-(iii)

69. Select the correct pair:

- | | | |
|-----------------|---|-----------------------|
| A. Maceration | – | Dehydration of sample |
| B. DPX | – | Mounting of sample |
| C. Acetocarmine | – | Killing the sample |
| D. Alcohol | – | Extraction of sample |

70. Camera lucida was developed by

- A. Wollaston
B. Louis Jules Duboscq
C. William Gascoigne
D. Hans Christian Gram

71. Bacterial cell wall is made up of:

- | | |
|--------------|------------------|
| A. Cellulose | B. Hemicellulose |
| C. Glycogen | D. Peptidoglycan |

72. Bacterial chromosome is

- A. Double stranded and circular
B. Double stranded and linear
C. Single stranded and circular
D. Single stranded and linear

73. Smallest disease-causing agents
- | | |
|-----------|---------------|
| A. Viron | B. Prion |
| C. Viroid | D. Mycoplasma |
74. Which part of virus enters into its host?
- | | |
|-------------|-----------------|
| A. Envelope | B. Nucleic acid |
| C. Capsid | D. All together |
75. Cap cells are characteristic of
- | | |
|----------------------|------------------------|
| A. <i>Oedogonium</i> | B. <i>Volvox</i> |
| C. <i>Chara</i> | D. <i>Polysiphonia</i> |
76. Primitive type of stele present in pteridophytes
- | | |
|----------------|----------------|
| A. Protostele | B. Dictyostele |
| C. Plectostele | D. Stenostele |
77. *Volvox* is a
- | | |
|------------------------|-------------------|
| A. Filamentous form | B. Siphonous form |
| C. parenchymatous form | D. colonial form |
78. Aquatic species of *Riccia* is
- | | |
|---------------------|--------------------------|
| A. <i>gangetica</i> | B. <i>discolour</i> |
| C. <i>fluitans</i> | D. <i>pathankotensis</i> |
79. Gemma cup are found in
- | | |
|------------------|----------------------|
| A. <i>Riccia</i> | B. <i>Marchantia</i> |
| C. <i>Pellia</i> | D. <i>Anthoceros</i> |
80. Shower of sulphur found in
- | | |
|-----------------|---------------------|
| A. <i>Cycas</i> | B. <i>Gnetum</i> |
| C. <i>Pinus</i> | D. Both (A) and (C) |

81. Pseudo elaters are present in
- | | |
|---------------------|---------------------|
| A. <i>Anthocero</i> | B. <i>Riccia</i> |
| C. <i>Moss</i> | D. All of the above |
82. A bryophyte differs from pteridophyte in:
- | | |
|-----------------------------|-----------------------------|
| A. Archegonia | B. Lack of vascular tissue |
| C. Flagellated antherozoids | D. independent gametophytes |
83. *Lichens* are good indicator of:
- | | |
|--------------------|---------------------|
| A. Air pollution | B. Soil pollution |
| C. Water pollution | D. All of the above |
84. Teleutospores of *Puccinia* are:
- | | |
|---------------|-----------------|
| A. one-celled | B. Three-celled |
| C. Two-celled | D. Four-celled |
85. *Sellaginella* also known as
- | | |
|-----------------------|---------------------|
| A. Resurrection plant | B. Maiden hair fern |
| C. Bog moss | D. Horse tail |
86. *Usnea* hanging from the substratum is a
- | | |
|---------------------|-------------------|
| A. Crustose lichen | B. Foliose lichen |
| C. Fruticose Lichen | D. None of these |
87. Pick the incorrect pair:
- | | |
|--------------------|------------------------|
| A. Hemiascomycetes | – <i>Saccharomyces</i> |
| B. Plectomycetes | – <i>Xylaria</i> |
| C. Discomycetes | – <i>Peziza</i> |
| D. Teliomycetes | – <i>Puccinia</i> |

88. What is the reserve food material in red algae?
- A. Starch
 - B. Floridean starch
 - C. Manitol
 - D. Laminarin
89. Which is the fossil gymnosperm?
- A. *Rhynia*
 - B. *Lygenopteris*
 - C. *Lepidodendron*
 - D. *Lepidocarpon*
90. Coralloid roots are present in
- A. *Cycus*
 - B. *Gnetum*
 - C. *Pinus*
 - D. None of these
91. Variation in gene frequencies within populations can occur by chance rather than by natural selection is known as:
- A. Genetic drift
 - B. Genetic load
 - C. Random mating
 - D. Genetic flow
92. The ratio of dominant epistasis in the F₂ generation is
- A. 9:3:4
 - B. 12:3:1
 - C. 9:7
 - D. 9:6:1
93. Which of the following options having cell organelles contains DNA?
- A. Nucleus, lysosomes and Chloroplast
 - B. Nucleus, Chloroplast and Mitochondria
 - C. Golgi apparatus, Endoplasmic reticulum and Nucleus
 - D. Nucleus, Mitochondria and Vacuole

94. Mendel proposed the law of independent assortment on the basis of _____
 - A. Monohybrid Cross
 - B. Dihybrid Cross
 - C. Allele
 - D. None of the above
95. Which one of the process is responsible for evolution of organism according to Neo-Darwinism?
 - A. Natural Selection
 - B. Mutations
 - C. Either mutation or natural selection
 - D. Mutation and natural selection
96. Which one of the histone is known as linker histone?
 - A. H1
 - B. H3
 - C. H4
 - D. H2
97. A new species emerges from a single ancestral species within the same geographic region as per this theory of speciation
 - A. Parapatric speciation
 - B. Allopatric speciation
 - C. Sympatric speciation
 - D. None of these
98. A cross between a tall pea plant and it's recessive parent is known as _____
 - A. Test cross
 - B. Back cross
 - C. Recessive Cross
 - D. Dominant cross
99. Stage of meiosis 1 where crossing over takes place _____
 - A. Leptotene
 - B. Zygotene
 - C. Pachytene
 - D. Diplotene
100. Who proposed chromosomal theory of inheritance
 - A. Sutton and Boveri
 - B. Hofmeister
 - C. Waldeyer
 - D. Correns

RESPONSE SHEET

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

ROUGH WORK

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