

Seat No.

Total No. of Pages : 12

Ph.D. Entrance Examination 2025
BOTANY Research Methodology
Sub. Code: 58800

Day and Date : Tuesday, 09-Sep-2025
Time : 04.00 pm to 06.00 pm

Total Marks : 100**Instructions:**

- 1) All questions are compulsory.
 - 2) Each question carries 2 mark.
 - 3) Answers should be marked in the given OMR answer sheet by darkening the appropriate option.
 - 4) Follow the instructions given on OMR sheet.
 - 5) Rough work shall be done on the sheet provided at the end of question paper.
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1. What is the primary goal of a pilot study in research?
 - A) To gather preliminary data
 - B) To test the hypothesis
 - C) To analyze final results
 - D) To select the sample size
2. Which statistical measure is used to assess the strength and direction of a relationship between two variables?
 - A) Mean
 - B) Median
 - C) Correlation coefficient
 - D) Standard deviation

3. are the qualities of a good research.

I-Good research is variable

II- Good research is systematic

III-Good research is plagiarised

IV-Good research is logical

V- Good research is philosophy

VI-Good research is empirical

VII- Good research is replicable

VIII- Good research is constant

A) I, III, V, VII

B) II, IV, VI, VII

C) III, VIII, V, VII

D) IV, II, VIII, VII

4. What ethical principle requires a researcher to minimize harm and maximize benefits for research participants?

A) Autonomy

B) Beneficence

C) Justice

D) Fidelity

5. To test null hypothesis, statistical tool is used.

A) t test

B) ANOVA

C) X^2

D) factorial analysis

6. To determine the frequency with which something occurs or with which it is associated with something else is known as research studies.

A) descriptive

B) exploratory

C) hypothesis testing

D) diagnostic

7. Magnification of a microscope is calculated by formula?
A) $m = f \times e / 1$
B) $m = 1 \times f \times e$
C) $m = e / f \times 1$
D) $m = 1 / f \times e$
8. Which of the following formula is used to obtain median of dataset where 'n' is odd ?
A) $n/2$
B) $n-1/2$
C) $n+1/2$
D) $n+2/2$
9. What is the difference between an independent and dependent variable?
A) The independent variable is manipulated by the researcher, while the dependent variable is measured
B) The dependent variable is manipulated by the researcher, while the independent variable is measured
C) Both the independent and dependent variables are manipulated by the researcher
D) Both the independent and dependent variables are measured
10. is an example of allopolyploid plant.
A) Wheat
B) Ipomoea
C) Potato
D) Coffee
11. The normal curve is
A) symmetrical
B) linear
C) curvilinear
D) disproportional
12. Vitamins and hormones are sterilized by using
A) Millipore filter
B) Hot air oven
C) UV light
D) Autoclave

13. What is the primary goal of triangulation in research?
- A) Confirming the reliability of research findings
 - B) Identifying outliers in data
 - C) Reducing sample size
 - D) Establishing a research hierarchy
14. are the basic principles used in every experimental design.
- A) Local control, Replication, Randomization
 - B) Replication, Randomization, Inference
 - C) Randomization, Production, Replication
 - D) Local control, Replication, Inference
15. Field-work-based research is classified as
- A) Empirical
 - B) Historical
 - C) Experimental
 - D) Biographical
16. server provides a comprehensive community resource for plant chromosome numbers.
- A) CCDB
 - B) BBBD
 - C) DDBC
 - D) CCCN
17. The term systematics was proposed by
- A) Robert Whittakar
 - B) Jonh Ray
 - C) Carl Linnaeus
 - D) Theodore Cooke

18. The rejection or acceptance of a null hypothesis is based upon level of significance as a criterion.
A) 30% B) 15%
C) 10% D) 5%
19. Which of the following is used to grow bacterial culture continuously?
A) Chemostat B) Hemostat
C) Coulter-Counter D) Turbidostat
20. Generalized conclusion on the basis of a sample is technically known as.....
A) Data analysis and interpretation
B) Parameter inference
C) Statistical inference
D) Philosophical analysis and interpretation
21. Standard error is the ratio of
A) Standard deviation and square root of mean
B) Standard deviation and square root of number of observations
C) Standard deviation and square of mean
D) Standard deviation and square of number of observations
22. The standard size of herbarium sheet is
A) 28×24cm B) 28×30cm
C) 28×36cm D) 28×42cm
23. is a statistical measure used in the context of sampling analysis for comparing a variance to a theoretical variance.
A) t-test B) Z-test
C) F-test D) Chi-square test

24. What is the purpose of peer review in the research publication process?
- A) To promote the author's work
 - B) To provide constructive feedback on research manuscripts
 - C) To establish authorship credits
 - D) To expedite the publication process
25. What is the purpose of a literature review in the research process?
- A) To summarize research findings
 - B) To provide a critical analysis of existing literature
 - C) To present study objectives
 - D) To generate research questions
26. The first genomic libraries were cloned in
- A) Plasmid
 - B) Bacteria
 - C) Human
 - D) Artificial chromosome
27. Panama disease of banana is caused by
- A) Bacteria
 - B) Fungi
 - C) Virus
 - D) Mycoplasma like organism
28. Which of the following is a hotspot of biodiversity?
- A) Desert
 - B) Tropical rainforest
 - C) Tundra
 - D) Savanna
29. Net gain of energy during conversion of one glucose molecule to two molecules of pyruvate in glycolysis is:
- A) 2 ATP + 2 NADH
 - B) 4 ATP+4 NADH
 - C) 4 NADH
 - D) 4 ATP

30. Find out the odd term from the given database resources:
- A) GenBank
 - B) DNA Data Bank of Japan
 - C) Protein Data Bank
 - D) European Molecular Biology Laboratory
31. Mosses and ferns are found in moist and shady places because both require..
- A) Presence of water for fertilization
 - B) Do not need sunlight for photosynthesis
 - C) Depend for their nutrition on micro-organisms which can survive only at low temperature
 - D) Cannot compete with sun loving plants
32. The Svalbard Global Seed Vault is located in
- A) Sweden
 - B) Denmark
 - C) Norway
 - D) Finland
33. Gymnosperms generally lack
- A) Xylem vessels
 - B) Sieve tubes
 - C) Thick walled tracheids
 - D) Cambium
34. Which of the organism is widely used as a bio-control in organic farming?
- A) *Rhizobium tropicii*
 - B) *Trichoderma viridis*
 - C) *Fusarium oxysporum*
 - D) *Nostoc muscorum*

35. technique was developed by Derrick and Bransky (1976) for the identification of plant viruses and mycoplasmas.
- A) Cryo-microtomy
 - B) High Resolution Autoradiography
 - C) Immuno-sorbent Electron Microscopy
 - D) Immuno-electron microscopy
36. Saffron is produced from the flowers of
- A) Mesua ferrea
 - B) Crocus sativus
 - C) Nelumbo nucifera
 - D) Mamea suriga
37. The chain termination method of DNA sequencing was proposed by
- A) Sanger
 - B) Muller
 - C) Korenberg
 - D) Mulis
38. Which of the following statement is FALSE about plasmid?
- A) They are self-replication molecules
 - B) Circular plasmid DNA is used as a vector cloning vector
 - C) They are double stranded
 - D) Their replication depends on host cell
39. In plant breeding, what does the term "heterosis" refer to?
- A) Inbreeding depression
 - B) Hybrid vigour
 - C) Genetic isolation
 - D) Selective breeding
40. In study of palaeopalynology most of the pollen grains come from
- A) Anemophilous plants
 - B) Entomophilous plants
 - C) Hermaphrodite
 - D) Hydrophily

41. Polyvinylidene difluoride (PVDF) is used inblotting.
A) Southern
B) Northern
C) Western
D) Southern, and northern
42. Shikimate pathway starts with the condensation of. and
A) Phosphoenolpyruvate and Glucose-6-phosphate
B) Phosphoenolpyruvate and Fructose-6-phosphate
C) Phosphoenolpyruvate and Erythrose-4-phosphate
D) Phosphoenolpyruvate and Xylulose-5-phosphate
43. A species is considered..... if it is characterized by a single reproductive episode before death.
A) Semelparous
B) Iteroparous
C) Viviparous
D) Seasonal iteroparous
44. As per classification of Algae given by Lee (2008), phylum Cryptophyta showed presence of pigments like.....
A) Chlorophyll a and b
B) Chlorophyll a and b, and Phycobiliproteins
C) Chlorophyll a and c, and Phycobiliproteins
D) Chlorophyll a and c, and Fucoxanthin
45. In plants, molecular chaperons are:
A) Glutathione and AFPs
B) HSPs and glutathione
C) LEA proteins and glutathione
D) HSPs and LEA proteins

46. Hemileia vastatrix is responsible for disease.
A) Bajra rust B) Tikka
C) Coffee rust D) Leaf spot of turmeric
47. Characteristics of both Pinaceae and Cycadaceae are seen combined in
A) Ginkgo B) Ephedra
C) Cupressus D) Thuja
48. Botanic Gardens Conservation International (BGCI) is a plant conservation charity based in
A) Kew B) Edinburgh
C) Paris D) Vienna
49. A mass spectrometer consist of following components
1- Solvent system, 2- UV detector, 3- pump, 4-a high vacuum system, 5 sample inlet, 6- C18 coloum, 7- an ion source, 8- a mass filter/analyser, 9-sputter coating, 10-a detector fluorescence
A) 2, 4, 6, 8, 10 B) 1, 3, 4, 5, 8,
C) 4, 5, 7, 8, 10 D) 3, 5, 8, 9, 10
50. Fritschella shows type of thallus.
A) Heterotrichous B) Parenchymatous
C) Pseudoparenchymatous D) Siphonaceous

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-- ROUGH WORK --

