Code No.	V – 2339

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

CSS

GENETICS AND PLANT BREEDING

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. Subviral particles that infect plant cells with the help of a virus are
   A. Prions
   B. Virusoids
   C. Virions
   D. Prions

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2. The microtubule arrangement in the flagellum of a eukaryotic cell

   A. 9 + 2 B. 9 + 1

   C. 10 + 1 D. 9 + 1 +1

3. Which among the following represents a micellar model of plasma membrane

   A. Unit membrane model B. Danielli-Davson model

   C. Fluid Mosaic model D. All of these

4. Which is not a component of 60s subunit of eukaryotic ribosome

   A. 28s r RNA B. 5sr RNA

   C. 5.8sr RNA D. 18sr RNA

5. Which among the following acts as the principal photosynthetyic pigment

A. Bacterioviridin
B. Carotene
C. Xanthophyll
D. Chlorophyll-c

6. Spindle attachment is possible throughout the entire chromosome in

A. Metacentric chromosomes
B. Submetacentric chromosomes
C. Holocentric chromosomes
D. Telocentric chromosomes

7. Spot the non-histone protein

A. DNA Polymerase
B. RNA polymerase
C. Acetyl transferase
D. All of these

8. Haploidy in which one chromosome is replaced by an alien chromosome from a different strain is best represented by

A. n–1+1
B. $n \pm 1$
C. n–1–1
D. n+1–1

9. The diameter of the double helix in Z-DNA is

A. 20 A°
B. 18 A°
C. 22 A°
D. 21 A°

10. Hydrogen bonds are broken during DNA replication by the enzyme

A. DNA Gyrase
B. Topoisomerases
C. DNA Helicase
D. None of these

11. A triplet codon representing methionine is

A. AUG
B. UAA
C. UAG
D. GUA

12. The concept of central dogma in molecular biology was given by

A. Jacob and Monod
B. Francis Crick
C. Watson and Crick
D. Marshall and Nirenberg

13. An example of a single-stranded DNA virus

A. φx 174
B. MS_2
C. SV40
D. TMV

14. Haploid plants can be raised by

A. Anther Culture
B. Pollen Culture
C. Ovule culture
D. All of these

15. Artificial seeds are produced by using the encapsulating agent

A. Sodium alginate
B. MS Medium
C. Sodium dodecyl sulphate
D. Sodium thiosulphate

16. First step in cryopreservation of plant tissues

A. Vitrification
B. Freezing
C. Thawing
D. Storage in liquid nitrogen

17. Synthetic DNA was first perfected by

A. Nirenberg
B. Har Govind Ghorana
C. Kary Mullis
D. Francis Crick

18. An example of a virus vector

A. SV 40
B. CaMV
C. HSV
D. All of these

19. A nucleotide sequence database

A. DDBJ
B. SWISSPROT
C. PDB
D. None of these

20. A *Riccia* species endemic to India

A. *Riccia gangetica* B. *Riccia frostii*

C. *Riccia ciliata* D. *Riccia reticulata*

21. Which among the following is a method of vegetative reproduction in *Funaria*

A. Fragmentation B. Gemmae

C. Bulbils D. All of these

22. A homosporous ferm

A. *Selaginella* B. *Pteris*

C. *Marsilea* D. *Salvinia*

23. Aposporous gametophytes in pteridophytes are

A. Haploid B. Diploid

C. Triploid D. Tetraploid

24. Which is not a fossil gymnosperm

A. *Rhynia* B. Zamia

C. *Williamsonia* D. *Palmoxylon*

25. A model organism

A. *Rhizopus* B. *Riccia*

C. *Rhynia* D. *Neurospora*

26. Crossing of F1 back to its recessive parent is

A. Test Cross B. Dihybrid cross

C. Monohybrid cross D. Distant hybridization

27. The Reason for Sickle cell anaemia

A. Substitution B. Deletion

C. Duplication D. Translocation

28. The phenomenon where one gene affects many aspects of a phenotype

A. Epistasis

B. Supplementary gene interaction

C. Pleiotrosm

D. Multiple allelism

29. Genotype and phenotype frequency remain the same in

A. Incomplete dominance

B. Co-dominance

C. Overdominance

D. Both A and B

30. A colourblind man marries a normal woman. What will be the percentage of offspring with colourblindness among the males in the FI

A. All males will be normal

B. All males will be colourblind

C. 50% males will be colourblind

D. 25% males will be colourblind

31. A rose comb (Rrpp) chicken was mated with walnut comb(RrPp) chicken. Determine the phenotype ratio of F1

A. 3 Walnut: 3 Rose: 1 Pea: 1 Single

B. 3 Walnut: 1 Rose: 3 Pea:1 Single

C. 1 Walnut: 1 Rose: 3 Pea: 3 Single

D. 2 Walnut: 2 Rose: 3 Pea: 1 Single

32. An example of incomplete penetrance

A. Phenyl ketonuria

B. Alkaptonuria

C. Polydactyly

D. Pattern baldness

33. The first proof that DNA is the genetic material was published by

A. Hershey and Chase
B. Avery, MacLeod and McCarty
C. Griffith
D. Lederberg and Tatum

34. The type of sex determination mechanism in Protenor is

A. XX-XY
B. XX-XO
C. ZZ-ZW
D. None of these

35. Klinefelter's syndrome is best represented by

A. 44+XO
B. 44XYY
C. 44+XXYY
D. 44+XXY

36. Plastid inheritance in *Mirabilis* was first reported by

A. Bridges
B. Morgan
C. Correns
D. Punnet

37. Parthenium, an invasive plant causing pollen allergy, came to India along with the import of

A. Rice
B. Carrot
C. Wheat
D. Maize

38. During double fertilization, the pollen tube deposits male gametes into the

A. Egg Cell
B. Central Cell
C. Antipodals
D. Synergids

39. Which of the following is not an ethical concern in research

A. Plagiarism
B. Informed Consent
C. Fabrication of data
D. Use of complex terminologies

40. Citrate is converted to isocitrate in TCA Cycle by the enzyme

A. Isocitrate dehydrogenase
B. Aconitase
C. Transketolase
D. Fumarase

41. An anticodon is found in

A. DNA
B. mRNA
C. rRNA
D. tRNA

42. In vitro amplification of DNA is achieved through

A. Electrophoresis
B. Southern blot
C. Western blot
D. PCR

43. An example of a nitrogen fixing cyanobacterium

A. Nostoc
B. Anabaena
C. Oscillatoria
D. Both A and B

44. A striking character of Archeae when compared to eubacteria

A. Ether-linked membrane lipids
B. Cell walls
C. RNA as genetic material
D. 80S ribosome

45. NAD+ and NADP+ are formed from

A. Vitamin B1
B. Vitamin B2
C. Vitamin B3
D. Vitamin B6

46. The most common fungal partner in lichen is

A. Zygomycetes
B. Ascomycetes
C. Basidiomycetes
D. Deuteromycetes

47. Which among the following is a bacterial disease

A. Rust of Wheat
B. Blight of Paddy
C. Crown gall
D. Powdery mildew

48. A living fossil

A. Ginkgo
B. Cycas
C. Pinus
D. Gnetum

49. The 'Irish Potato Famine' was due to

A. Phytophthora infestans

B. Alternaria solani

C. Pseudomonas syringae

D. Xanthomonas campestris

50. In a scientific experiment, the variable that is deliberately changed is

A. Dependent variable

B. Control variable

C. Independent variable

D. Observational variable

51. The type of placentation in tomato is

A. Axile

B. Parietal

C. Free central

D. Marginal

52. Diadelphous stamens and zygomorphic flowers are characteristic of

A. Malvaceae

B. Fabaceae

C. Solanaceae

D. Asteracaeae

53. Quinine is obtained from

A. Papaver somniferum

B. Atropa belladonna

C. Cinchona officinalis

D. Digitalis purpurea

54. Morphology of the useful part of Apple is

A. Placenta

B. Swollen thalamus

C. Ovary

D. Calyx

55. The term 'Biodiversity Hotspot' was introduced by

A. Norman Myers

B. Rachel Carson

C. Charles Darwin

D. Carl Linnaeus

56. Wallace's line is associated with

A. Zoogeography and phytogeography

B. Glaciology

C. Oceanography

D. Ethnobotany

57. The largest terrestrial biome in the world

A. Tundra

B. Taiga

C. Tropical rain forest

D. Grassland

58. An extinct fossil record of a seed fern

A. Rhynia

B. Glossopteris

C. Selaginella

D. Marchantia

59. The ozone layer is situated in

A. Troposphere

B. Startosphere

C. Mesosphere

D. Themosphere

60. The primary acceptor of electrons in Calvin cycle is

A. ATP

B. NADPH

C. RuBP

D. PEP

61. A protein visualization tool

A. BLAST

B. PDB

C. RasMol

D. PHYLIP

62. The programming language widely used in bioinformatics

A. PYTHON

B. JAVA

C. C++

D. PASCAL

63. Green revolution in India mainly focused on the improvement of

A. Maize
B. Fruits and vegetables
C. Wheat and Rice
D. Ornamentals

64. Photorespiration is favoured in the presence of

A. High CO_2 and low O_2
B. High light and temperature
C. Increased water availability
D. None of these

65. The initial CO_2 fixation in C_4 plants occur in

A. Bundle sheath cells
B. Mesophyll cells
C. Epidermal cells
D. Guard cells

66. The genotype of the mother dictates phenotype of the offsprings in

A. Cytoplasmic inheritance
B. Sex linked inheritance
C. Quantitative inheritance
D. Multiple

67. The term 'crude drug' refers to

A. Unprocessed plant material
B. Processed plant material
C. Chemically synthesised drug
D. None of these

68. The F_2 Phenotype ratio in dominant epistasis is

A. 9:3:4
B. 12:3:1
C. 9:7
D. 9:6:1

69. The condition of stamens in Cucurbita is

A. Syngenicious
B. Synandrous
C. Diadelphous
D. Gynandrous

70. A special type of inflorescence

A. Spike
B. Catkin
C. Hypanthodium
D. Verticillaster

71. The commonest type of endosperm in plants.

A. Helobial
B. Cellular
C. Nuclear
D. Ruminate

72. Plant hormone associated with fruit ripening

A. Ethylene
B. Abscisic acid
C. Gibberellin
D. All of these

73. An example of aggregate fruit

A. Annona
B. Morus
C. Jackfruit
D. Pineapple

74. Entry of pollen tube into the embryosac through the integuments is referred to as

A. Porogamy
B. Chalazogamy
C. Mesogamy
D. Herkogamy

75. Anomalous secondary thickening occurs in

A. Boerhaavia
B. Bougainvillea
C. Bignonia
D. All of these

76. Major part of wood is made of

A. Lignin
B. Cellulose
C. Hemicellulose
D. Resins and oils

77. A vascular bundle with xylem surrounded by phloem is

A. Amphicribral
B. Amphivasal
C. Radial
D. Bicollateral

78. The roughness of grass leaves is due to

A. Silica deposits
B. Calcium carbonate
C. Calcium oxalate
D. All of these

79. A type of pit in which there is no complementary companion in the adjacent cell

A. Bordered pit
B. Blind pit
C. Half bordered
D. Simple pit

80. The central pith like parenchymatous zone of Funaria capsule is

A. Theca
B. Columella
C. Spore Sac
D. Apophysis

81. The sporangial development is Eusporangiate in

A. Psilotum
B. Lycopodium
C. Equisetum
D. All of these

82. A similarity of pteridophyte with bryophytes

A. Heterospory

B. Water is essential for fertilization

C. Sporophytie plant body

D. Well developed vascular bundles

83. Which of the following comes under the category of protostele

A. Haplostele

B. Actinostele

C. Plectostele

D. All of these

84. The nature of endosperm in gymnosperms

A. Triploid

B. Diploid

C. Haploid

D. Polyploid

85. The Institute of Paleobotany was established by

A. Birbal Sahni

B. M.S. Swaminathan

C. MOP Iyengar

D. E.K. Janaki Ammal

86. Enzymes that catalyse the same type of reactions

A. Isoenzyme

B. Allosteric enzyme

C. Antienzyme

D. None of these

87. An example of a reducing sugar found in plants

A. Glucose

B. Sucrose

C. Maltose

D. Cellulose

88. The bacterial cell wall is made of

A. Cellulose

B. Murein

C. Chitin

D. Pectocellulose

89. Which of the following blood groups will not appear among the offspring of parents with A and AB blood groups

A. A
B. B
C. AB
D. O

90. The concept of falsifiability in science was introduced by

A. Aristotle
B. Karl Popper
C. Francis Bacon
D. René Descartes

91. The rate of photosynthesis is not affected by

A. Oxygen concentration
B. Light intensity
C. Temperature
D. Water availability

92. The substrate for photorespiration

A. Glycolate
B. Phosphoglycerate
C. Phosphoglyceraldehyde
D. Pyruvic acid

93. CAM pathway occurs in

A. All angiosperms
B. Mesophytes
C. Succulents
D. All of these

94. The number of ATP and NADPH molecules required for the synthesis of a molecule of glucose respectively is

A. 18 and 12
B. 12 and 18
C. 8 and 12
D. 12 and 8

95. Plant hormone associated with seed dormancy

A. Giberellin
B. Cytokinin
C. Ethylene
D. Abscissic acid

96. Gene expression can be inhibited by

A. RNA polymerase
B. Si RNA
C. Translational regulator
D. Translational proteins

97. Protein coding genes are transcribed by

A. RNA Polymerase I
B. RNA Polymerase II
C. DNA Polymerase I
D. DNA Polymerase II

98. The first plant genome to be sequenced is

A. *Arabidopsis thaliana*
B. *Zea mays*
C. *Oryza sativa*
D. *Solanum lycopersicon*

99. The formation of 1000 functional egg cells require

A. 250 meiotic divisions
B. 1000 meiotic divisions
C. 500 meiotic divisions
D. 200 meiotic divisions

100. Cystic fibrosis is

A. an autosomal dominant disorder
B. an autosomal recessive disorder
C. A sex linked dominant disorder
D. A sex linked recessive disorder

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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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