

No. of Pages. 20

Code No.

**Y – 3041**

Register Number :

Time : 2 Hours

Name :

Max.Marks : 100

**Entrance Examination for Admission to the P.G. Courses in the  
Teaching Departments, 2026**

**CSS**

**GENETICS AND PLANT BREEDING**

**GENERAL INSTRUCTIONS**

1. The Question Paper is having 100 Objective Questions, each carrying one mark.
2. The answers are to be marked **only** in the “**OMR Sheet**” provided.
3. **Negative marking : 0.25 marks** will be deducted for each wrong answer .

**INSTRUCTIONS FOR FILLING THE OMR SHEET**

- The OMR sheet should not be folded or crushed.
- Use only blue/black ball point pen to fill the circles.
- Use of pencil is strictly prohibited.
- Circles should be darkened completely and properly.
- Cutting and erasing on this sheet is not allowed.
- Do not leave any stray marks on the sheet.
- Do not use marker or white fluid to hide the mark.

• **WRONG METHODS**



**CORRECT METHOD**









15. Following is the characteristic of collenchyma
- Elongated cells with thickened corners
  - Isodiametric cells with thickened walls
  - Elongated cells with deposits of cellulose and pectin
  - Isodiametric cells with deposits of cellulose and pectin
16. If a plant with genotype AaBb is self-fertilized, the probability of getting AABB genotype will be (A and B are not linked)
- 1/2
  - 1/4
  - 1/8
  - 1/16
17. Proteins are found to have two different types of secondary structures viz.  $\alpha$ -helix and  $\beta$ -pleated sheet structures.  $\alpha$ -helix structure of a protein is stabilised by:
- Hydrogen bonds
  - Van der Waals forces
  - Peptide bonds
  - Dipole-dipole interactions
18. For wheat, which of the following combinations is correct?
- Genus Triticum, family Poaceae, order Poales, Class Monocotyledonae
  - Genus Triticum, family Poaceae, order Poales, Class Dicotyledonae
  - Genus Triticum, family Poaceae, order Sapindales, Class Monocotyledonae
  - Genus Triticum, family Anacardiaceae, order Poales, Class Monocotyledonae
19. Ratio 9:7 in the F2 generation represents \_\_\_\_\_
- Incomplete dominance
  - Co-dominance
  - Epistasis
  - Complementary interaction

20. Which of the following differentiates conifers from grasses?
- A. Absence of pollen tubes
  - B. Lack of xylem tracheids
  - C. Seeds are produced from ovules
  - D. Endosperm formation without fertilization
21. Hepatitis is an example of \_\_\_\_\_
- A. Subunit Vaccine
  - B. Killer Vaccine
  - C. Toxoids Vaccine
  - D. Recombinant Vaccine
22. Pick the right sequence of taxonomic categories
- A. division-class-family-tribe-order-genus-species
  - B. division-class-family-order-tribe-genus-species
  - C. division-class-order-family-tribe-genus-species
  - D. division-order-class-family-genus-tribe-species
23. This statement regarding enzyme inhibition is correct
- A. non-competitive inhibitors often bind to the enzyme irreversibly
  - B. non-competitive inhibition of an enzyme can be overcome by adding a large amount of substrate
  - C. competitive inhibition is observed when substrate and inhibitor compete for the active site on enzyme
  - D. competitive inhibition is observed when substrate competes with an enzyme to bind to an inhibitor protein
24. Which of the following is an imino acid?
- A. Serine
  - B. Alanine
  - C. Glycine
  - D. Proline

25. This hormone is not a growth inhibitor
- A. Dormin
  - B. Abscisic acid
  - C. Ethylene
  - D. Indole-3-acetic acid (IAA)
26. Cybrids are produced by \_\_\_\_\_
- A. The nucleus of one species but cytoplasm from both the parent species
  - B. The fusion of two same nuclei from the same Species
  - C. The fusion of two different nuclei from different species
  - D. None of the above
27. Oxygen is not produced during photosynthesis by \_\_\_\_\_
- A. Nostoc
  - B. Cycas
  - C. Green sulphur bacteria
  - D. Chara
28. Find the incorrect statement
- A. BOD value of clean water is less than 5 ppm
  - B. Drinking water pH should be between 5.5-9.5
  - C. Carbon, sulphur and nitrogen oxides are the most widespread air pollutants
  - D. Dissolved oxygen concentration below 5 ppm is ideal for the growth of fish
29. Which cell organelle is involved in apoptosis?
- A. Lysosome
  - B. Endoplasmic reticulum
  - C. Golgi
  - D. Mitochondria
30. Which of the following is an example of epimers?
- A. Mannose and Glucose
  - B. Glucose and Ribose
  - C. Galactose and Mannose
  - D. Glucose and Galactose

31. A chromosome with a very short arm and a very long arm is referred to as
- |                |                    |
|----------------|--------------------|
| A. Metacentric | B. Telocentric     |
| C. Acrocentric | D. Sub-metacentric |
32. \_\_\_\_\_ is the precursor for the biosynthesis of Indole-3-acetic acid.
- |               |                              |
|---------------|------------------------------|
| A. Methionine | B. Tryptophan                |
| C. Glycine    | D. Isopentenyl pyrophosphate |
33. Which of the following processes does not occur in prokaryotes?
- |                  |                |
|------------------|----------------|
| A. Transcription | B. Splicing    |
| C. Translation   | D. Replication |
34. Cytoplasm of the pollen grains are rich in \_\_\_\_\_
- |             |             |
|-------------|-------------|
| A. starch   | B. proteins |
| C. minerals | D. vitamins |
35. Which chemical is commonly used to induce polyploidy in plant breeding?
- |                 |                         |
|-----------------|-------------------------|
| A. Colchicine   | B. Acridine orange      |
| C. Acetocarmine | D. Ethyl methyl sulfite |
36. Who is the father of the green revolution in India?
- |                     |                  |
|---------------------|------------------|
| A. Charles Darwin   | B. Herbert Boyer |
| C. M.S. Swaminathan | D. Stanley Cohen |
37. The male parent of Panniyur 1 black pepper is \_\_\_\_\_
- |                   |                 |
|-------------------|-----------------|
| A. Cheriyanakadan | B. Uthirankotta |
| C. Karimunda      | D. Neelamundi   |
38. In an entity with genetic composition AA+XXY such as Drosophila will be a normal female. In the case of mammals, it will be?
- |                  |                |
|------------------|----------------|
| A. Turner        | B. Klinefelter |
| C. Normal female | D. Normal male |

39. Which of the following will be sterile?
- A. Tetraploid
  - B. Diploid
  - C. Triploid
  - D. Monoploid
40. Which of the following is also known as the removal of one or more bases from the nucleotide chain?
- A. Deletion
  - B. Insertion
  - C. Transition
  - D. Transversion
41. Molecular markers that are dominant and fail to distinguish between homozygous dominant and heterozygous genotypes are:
- A. SSR
  - B. RFLP
  - C. RAPD
  - D. SNPs
42. If the birth weight of each of 10 babies born in a hospital in a day is found to be 2.8 kgs, then the standard deviation of this sample will be
- A. 2.8
  - B. 0
  - C. 1
  - D. 28
43. What is the mean of a Chi Square distribution with 6 degrees of freedom?
- A. 4
  - B. 12
  - C. 6
  - D. 8
44. From the following, where are Short Tandem Repeats (STRs) commonly applied?
- A. DNA replication
  - B. Paternity testing and forensic analysis
  - C. RNA transcription
  - D. Protein synthesis



51. Which of the following microbes are used for the commercial production of citric acid?
- Xanthomonas citri
  - Spirogyra mirabilis
  - Saccharomyces cerevisiae
  - Aspergillus niger
52. The condition of Polyadelphous stamen can be found in
- Rutaceae
  - Leguminosae
  - Compositae
  - Liliaceae
53. Which of the following carotenoid is present in tomato?
- Lycopene
  - Lutein
  - Zeaxanthin
  - Carotene
54. What causes the soft rot disease of ginger?
- Pectobacterium species*
  - Fusarium species*
  - Lactobacillus species*
  - Penicillium species*
55. Which will be the India's first edible genetically modified crop?
- DMH— 11 Mustard
  - PDS-12 Golden Rice
  - Bt cotton
  - Bt Brinjal
56. What was the first genetically engineered food crop commercially available and approved by the FDA in 1994?
- Flavr Savr tomato
  - Protato
  - DMH- 11
  - Bt brinjal

57. Which of the following statements is correct for normal phase HPLC?
- A. The stationary phase is nonpolar, and the mobile phase is polar
  - B. The mobile phase is nonpolar, while the stationary phase is polar
  - C. Adding a more polar solvent to the mobile phase increases eluent strength.
  - D. Adding a less polar solvent to the mobile phase increases eluent strength
58. What is the wavelength range of the UV spectrum?
- A. 100 nm to 500 nm
  - B. 200 nm to 800 nm
  - C. 300 nm to 1000 nm
  - D. 400 nm to 1600 nm
59. Resolving power of a microscope depends upon \_\_\_\_\_
- A. The focal length and aperture of the eye lens
  - B. The focal length and objective of the eye lens
  - C. The apertures of the objective and the eye lens
  - D. The wavelength of light illuminating the object
60. Electron Microscope can give a magnification upto
- A. 400,000X
  - B. 100,000X
  - C. 15000X
  - D. 100X
61. Lipopolysaccharide in cell walls is characteristic of
- A. Gram-positive bacteria
  - B. Gram-negative bacteria
  - C. Fungi
  - D. Algae
62. Which fluorescent dye can be used for red fluorescence?
- A. Rhodamine
  - B. Fluorescein
  - C. Carmine
  - D. DAPI

63. A  $p+/v+$   $p+/v+$  male *Drosophila* was crossed to a  $p-/v-$   $p-/v-$  and the F1 hybrid was obtained. Then the F1 male was crossed with a double recessive female. What will be the recombination phenotype in F2?
- $p+/v+$   $p-/v-$  only
  - $p+/v+$   $p-/v-$  and  $p-/v-$   $p-/v-$
  - $p+/v+$   $p-/v-$  and  $p-/v-$   $p-/v-$  also  $p+/v-$   $p-/v-$  and  $p-/v-$   $p-/v-$
  - $p+/v+$   $p-/v-$  and  $p-/v-$   $p-/v-$  also  $p-/v+$   $p-/v-$  and  $p-/v-$   $p-/v-$
64. Which compound is proven by Feulgen's method (Feulgen's staining)?
- DNA
  - RNA
  - Proteins
  - Carbohydrate
65. Viviparous germination of seeds occurs in
- Xerophytes
  - Mesophytes
  - Mangroves
  - Epiphytes
66. Law of Dominance is also called
- Law of uniformity of 1<sup>st</sup> filial generation
  - Dominance
  - Law of purity of gametes
  - None of these
67. Which of the following is a plant hormone synthesized from linolenic acid that plays a significant role in plant defence against biotic stresses like insect attacks?
- Absciscic acid
  - Jasmonic acid
  - Gibberellic acid
  - Ascorbic acid
68. Halophytes are plants that are best adapted to which type of stress?
- High drought
  - High temperature
  - High salt concentration
  - Low nutrients

69. What is the effect of Phenyl mercuric acetate (PMA) on plants, often used to study stress?
- A. Reduced photosynthesis                      B. Reduced transpiration  
C. Reduced respiration                          D. Increased transpiration
70. Which of the following is a disaccharide commonly transported in plants?
- A. Glucose    B. Fructose  
C. Sucrose    D. Starch
71. Where does the Calvin cycle take place?
- A. Cytoplasm    B. Stroma of chloroplasts  
C. Mitochondria                                      D. Thylakoid membrane
72. What is the primary acceptor in the Calvin cycle?
- A. PGA    B. RuBP  
C. PEP    D. Glucose
73. Which of the following is not a phase of the Calvin cycle?
- A. Carbon fixation                                  B. Reduction  
C. Regeneration of RuBP                          D. Glycolysis
74. Electron transport system (ETS) is present in which of the following parts of mitochondria?
- A. Inner membrane                                  B. Outer membrane  
C. Matrix    D. Stroma
75. In the Bentham and Hooker system, the seed plants were divided into:
- A. Dicotyledons, Gymnosperms, and Monocotyledons  
B. Thallophyta, Bryophyta, and Pteridophyta  
C. Cryptogams and Phanerogams  
D. Monera and Protista





88. Scientists at JNTBGRI rediscovered which threatened tree species (local name 'Kavilippa') in 2020 after a gap of over 180 years?
- A. *Madhuca diplostemon*                      B. *Diospyros species*  
C. *Vateria indica*                              D. *Hopea parviflora*
89. Which plant possesses the highest known chromosome number?
- A. *Azolla pinnata*                              B. *Lycopodium cernuum*  
C. *Selaginella apus*                            D. *Ophioglossum reticulatum*
90. Which protein found in wheat is crucial for chapati-making quality?
- A. Albumin                                      B. Globulin  
C. Gluten                                        D. Prolamin
91. Which is the largest botanical garden in the world?
- A. Indian Botanic Garden, Howrah  
B. Missouri Botanical Garden, USA  
C. Royal Botanic Gardens, Kew, London  
D. Singapore Botanic Garden
92. Which sampling technique is most appropriate for studying the change in vegetation cover along an elevation gradient on a mountain?
- A. Simple random sampling  
B. Line transect sampling  
C. Capture-recapture sampling  
D. Snowball sampling
93. Which method is most suited for estimating the density of immobile organisms like plants or slow-moving organisms like snails within a specific area?
- A. Quadrat sampling                              B. Line intercept sampling  
C. Point intercept sampling                      D. Mark-recapture



## **ROUGH WORK**

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