

C 41687

(Pages : 16)

Name.....

Reg. No.....

P.G./INTEGRATED P.G. ENTRANCE EXAMINATION, APRIL 2023

APPLIED PLANT SCIENCE

Time : Two Hours

Maximum : 400 Marks

Attempt all questions. All questions carry 4 marks each.

For each wrong answer 1 mark will be deducted.

1. Viroids differ from virions in having :

- (A) DNA molecule with protein coat.
- (B) Single stranded DNA molecule with protein coat.
- (C) RNA molecule without protein coat.
- (D) RNA molecule with protein coat.

2. Bacteria that lack cell wall :

- (A) Rickettsia.
- (B) Gram negative bacteria.
- (C) Mycoplasma.
- (D) Actinomycetes.

3. Thread-like chain of cells which represents earliest stage of gametophytic development of mosses are known as :

- (A) Protonema.
- (B) Prothallus.
- (C) Columella.
- (D) Perichaetium.

4. During DNA replication primer removal is carried out by :

- (A) 3' - 5' endonuclease.
- (B) 5' - 3' endonuclease.
- (C) 3' - 5' exonuclease.
- (D) 5' - 3' exonuclease.

Turn over

5. Which of the following type of bacteria converts nitrites to nitrates ?
- (A) Nitrobacter. (B) Nitrosomonas.
(C) Denitrifying bacteria. (D) Thiobacillus.
6. Cephaleuros is an example for :
- (A) Parasitic fungi. (B) Parasitic green algae.
(C) Parasitic brown algae. (D) Parasitic protozoan.
7. Choose the correct order of plant cell wall layers from inside to outside of the cell :
- (A) Secondary cell wall - Primary cell wall - Middle lamella.
(B) Primary cell wall - Secondary cell wall - Middle lamella.
(C) Middle lamella - Secondary cell wall - Primary cell wall.
(D) Middle lamella - Primary cell wall - Secondary cell wall.
8. Protein part of a conjugate enzyme is known as :
- (A) Holoenzyme. (B) Apoenzyme.
(C) Coenzyme. (D) Co-factor.
9. Termination codon UAA also known as :
- (A) Ochre. (B) Opal
(C) Amber. (D) Met codon.
10. Sedimentation co-efficient of mitochondrial ribosome :
- (A) 80s. (B) 16s.
(C) 70s. (D) 5.8s.
11. Which of the following cell type will lose their nuclei upon maturity ?
- (A) Sieve element. (B) Red blood cells.
(C) Xylem vessels. (D) All of the above.

12. A patient with Turner syndrome will have :
- (A) 44 Chromosomes. (B) 45 Chromosomes.
(C) 46 Chromosomes. (D) 47 Chromosomes.
13. 'Balbiani rings' are characteristic features of :
- (A) Lampbrush Chromosomes.
(B) B-Chromosomes.
(C) Polytene Chromosomes.
(D) Satellite Chromosomes.
14. If the haploid number of chromosomes in a particular angiosperm crop plant is 10, then what will be the number of chromosomes in somatic cells of monosomic formed from this plant ?
- (A) 9. (B) 19.
(C) 21. (D) 11.
15. Genetic material of a species is dsDNA. It contains 22 % Guanine. What will be the percentage of Adenine in its DNA ?
- (A) 22 %. (B) 78 %.
(C) 28 %. (D) 56 %.
16. Oxysomes are located on the
- (A) Inner mitochondrial membrane.
(B) Outer mitochondrial membrane.
(C) Glyoxysome membrane.
(D) Lysosome membrane.
17. Histones are positively charged due the presence of amino acids.
- (A) Lysine and arginine. (B) Glycine and alanine.
(C) Glycine and Leucine. (D) Lysine and aspartate.
18. In Meselson Stahl experiment, *E.coli* cells were grown for several generations in ^{15}N containing growth media. What percentage of DNA was composed of one light strand and one heavy strand after two generations of growth in ^{14}N containing growth media ?
- (A) 100 %. (B) 50 %.
(C) 75 %. (D) 25 %.

Turn over

19. Colourless plastids which stores starch are called :

- (A) Elaioplast.
- (B) Etioplast.
- (C) Aleuroplast.
- (D) Amyloplast.

20. In chloroplast chlorophyll is located in :

- (A) Stroma.
- (B) Thylakoid membrane.
- (C) Inter membrane space.
- (D) All of the above.

21. Histogen concept of root apex organisation is put forwarded by :

- (A) C. Nageli.
- (B) Clowes.
- (C) Hanstein.
- (D) Schuepp.

22. Anomalous secondary growth is present in :

- (A) Boerhaavia.
- (B) Polyalthia.
- (C) Vernonia.
- (D) Tinospora.

23. Cork cells are :

- (A) Living.
- (B) Dead.
- (C) Physiologically active.
- (D) Photosynthetic.

24. Choose the correct statement :

- (A) In root vascular bundles are radial and endarch.
- (B) In root vascular bundles are radial and exarch.
- (C) In stem vascular bundles are conjoint and exarch.
- (D) In root vascular bundles are conjoint and endarch.

25. Casparian strips are seen in :

- (A) Epidermis.
- (B) Endothecium.
- (C) Endodermis.
- (D) Pericycle.

26. Cambium developed from some cells of medullary rays is known as :
- (A) Fascicular cambium. (B) Intrafascicular cambium.
(C) Cork cambium. (D) Interfascicular cambium.
27. In some cases, mature differentiated cells will regain its meristematic activity. This is called :
- (A) Differentiation. (B) Dedifferentiation.
(C) Redifferentiation. (D) Transdifferentiation.
28. In woody trees, central portion of stem is hard and dark in colour. It is called :
- (A) Heart wood. (B) Sap wood.
(C) Alburnum. (D) Spring wood.
29. Bulliform cells or motor cells are present in :
- (A) Mangifera leaves. (B) Ixora leaves.
(C) Wheat leaves. (D) Sunflower leaves.
30. Endemic species are defined as :
- (A) Species introduced into a new area where it did not exist before.
(B) Species at risk of extinction.
(C) Species native to a specific area.
(D) Species found in an area and nowhere else.
31. A messenger RNA is 999 bases long including initiation and terminator codons. The number of amino acids in the polypeptide translated from this is :
- (A) 333. (B) 332.
(C) 331. (D) 999.
32. Chemical nature of primer in eukaryotic DNA replication :
- (A) ssDNA. (B) dsDNA.
(C) RNA. (D) Protein.

33. Molarity of a solution having 10 moles of solute present in 2 litre of solution is :
- (A) 5 M. (B) 0.5 M.
(C) 20 M. (D) 0.2 M.
34. The term 'meristem' was coined by :
- (A) N. Grew. (B) Marcello Malpighi.
(C) C. Nageli. (D) Buvat.
35. pH of a solution is 6. Then what will be the pOH of the solution ?
- (A) 6. (B) - 6.
(C) 8. (D) 13.
36. Beer's law states that intensity of a beam of monochromatic light transmitted by a solution decreases inversely with the _____ of the solution.
- (A) Path length. (B) Volume.
(C) Pressure. (D) Concentration.
37. In graphical representation of data, cumulative frequency curve is also known as :
- (A) Frequency polygon. (B) Ogives.
(C) Histogram. (D) Cartograms.
38. If a couple have two daughters and one son. what is the chance that the fourth child will be a son ?
- (A) 100 %. (B) 50 %.
(C) 25 %. (D) 75 %.
39. Which of the following is not an example for measures of dispersion ?
- (A) Median. (B) Range.
(C) Variance. (D) Standard deviation.

40. A couple have four children with blood group A, AB, B and O. Then genotypes of their parents will be :
- (A) $I^A I$ and $I^B I^B$. (B) $I^A I^B$ and $I I$.
(C) $I^A I$ and $I^B I$. (D) $I^A I^B$ and $I^A I^B$.
41. Phase contrast microscope was invented by :
- (A) Frits Zernike. (B) Z. Jannssen.
(C) Zsigmondy. (D) M. Knoll and Ruska.
42. Acetocarmine stains :
- (A) Cytoplasm. (B) Chromosomes.
(C) Starch. (D) Fatty substance.
43. Group of flagella is present only at one end of the bacterial cell in :
- (A) Monotrichous bacteria. (B) Amphitrichous bacteria.
(C) Lophotrichous bacteria. (D) Peritrichous bacteria.
44. Bacteria used in large scale production of Butyl alcohol is :
- (A) *Clostridium botulinum*. (B) *Clostridium acetibutyricum*.
(C) *Bacillus megatherium*. (D) *Bacillus amyloliquifaciens*.
45. Interferons are produced in response to infection caused by :
- (A) Bacteria. (B) Viruses.
(C) Fungi. (D) Protozoan.
46. Bacteriophage mediated transfer of genetic material in bacteria :
- (A) Transformation. (B) Conjugation.
(C) Transduction. (D) Transgenesis
47. Genome of HIV :
- (A) dsDNA. (B) ssDNA.
(C) dsRNA. (D) ssRNA.

48. Largest human chromosome is :
- (A) Chromosome 1. (B) Chromosome 8.
(C) Chromosome 22. (D) X chromosome.
49. The amino acid which act as precursor for Auxin biosynthesis is :
- (A) Tyrosine. (B) Tryptophan.
(C) Methionine. (D) Alanine.
50. λ gt10 is a :
- (A) Plasmid vector. (B) Cosmid vector.
(C) Phage vector. (D) BAC.
51. Which of the following nucleotide sequence represents telomere repeats in humans ?
- (A) TTAGGG. (B) TAATGG.
(C) GAATCC. (D) GGATCC.
52. 'Red snow' is caused by :
- (A) Sargassum vulgare. (B) Polysiphonia nigra.
(C) Chlamydomonas nivalis. (D) Pinnularia viridis.
53. Which of the following crossing method is adapted for identifying whether an organism exhibiting a dominant trait is homozygous or heterozygous for that allele ?
- (A) Monohybrid cross. (B) Test cross.
(C) Back cross. (D) Dihybrid cross.
54. Following genotypes are found in a population.

Genotype	...	AA	Aa	aa
No. of organisms	...	40	140	20

What are the allelic frequencies of A and a ?

- (A) 0.55 and 0.45. (B) 0.9 and 0.1.
(C) 0.35 and 0.65. (D) 0.75 and 0.25.

55. Match the following diseases with their causative organism.

Column I

Column II

(A) Bunchy top of Banana

(I) Fungal disease

(B) Citrus Canker

(II) Phytoplasma

(C) Quick wilt of Pepper

(III) Bacteria

(D) Root wilt of Coconut

(IV) Virus

(A) A – IV, B – III, C – II, D – I.

(B) A – II, B – IV, C – III, D – I.

(C) A – II, B – IV, C – III, D – I.

(D) A – IV, B – III, C – I, D – II.

56. Lichen which grow on rock are called :

(A) Corticulous lichen.

(B) Saxiculous lichen.

(C) Terriculous lichen.

(D) Crustose lichen.

57. Match the following :

Column I

Column II

A *Pythium*

(I) Ascomycotina.

B *Peziza*

(II) Mastigomycotina.

C *Mucor*

(III) Basidiomycotina.

D *Puccinia*

(IV) Zygomycotina.

(A) A – II, B – I, C – IV, D – III.

(B) A – II, B – III, C – IV, D – I.

(C) A – I, B – IV, C – II, D – III.

(D) A – I, B – III, C – II, D – IV.

58. Name the class of fungi, which is commonly called 'fungi imperfecti'.

(A) Ascomycetes.

(B) Basidiomycetes.

(C) Zygomycetes.

(D) Deuteromycetes.

Turn over

59. Floridean starch is the reserve food material in :
(A) Gelidium. (B) Dictyota.
(C) Sargassum. (D) Pinnularia.
60. Coenocytic algae :
(A) Oedogonium. (B) Vaucheria.
(C) Oscillatoria. (D) Polysiphonia.
61. Oedogonium species in which antheridia develops on short filaments are called :
(A) Nannandrous. (B) Macrandrous.
(C) Heterothallus. (D) Heterotrichous.
62. Carrageenin is obtained from the algal species :
(A) Chondrus crispus. (B) Ectocarpus commensalis.
(C) Chara vulgaris. (D) Vaucheria dichotoma.
63. Identify aquatic bryophyte :
(A) Polytrichum juniperum. (B) Anthoceros himalayensis.
(C) Riccia fluitans. (D) Buxbaumia aphylla.
64. Only the disintegration of the gametophytic plant body liberates spores from the sporophyte in :
(A) Riccia. (B) Anthoceros.
(C) Funaria. (D) Polytrichum.
65. In some pteridophytes sporangium develop from a single cell. This is termed as :
(A) Homosporous type. (B) Heterosporous type.
(C) Eusporangiate type. (D) Leptosporangiate type.
66. Pteridophytes are also known as :
(A) Vascular phanerogams. (B) Amphibians of plant kingdom.
(C) Vascular thallophytes. (D) Snakes of plant kingdom.

67. Trabeculated endodermis is seen in :
- (A) Selaginella. (B) Psilotum.
(C) Equisetum. (D) Marsilea.
68. Monomers of microtubules :
- (A) Myosin. (B) Actin.
(C) Integrin. (D) Tubulin.
69. Photophosphorylation was discovered by :
- (A) J. C. Bose. (B) Blackman.
(C) D. Arnon. (D) Melvin Calvin.
70. The limitations of embryo expansion is removed and the germination of many seeds can be accelerated through mechanical disruption of seed coat. This process is called :
- (A) Seed dormancy. (B) Scarification.
(C) Stratification. (D) Lyophilization.
71. Vivipary is a characteristic feature of :
- (A) Orchids. (B) Rhizophora.
(C) Marantaceae. (D) Heliconiaceae.
72. Aerobic respiratory pathway is :
- (A) Catabolic. (B) Anabolic.
(C) Amphibolic. (D) None of the above.
73. Gross primary productivity minus respiration losses is termed as :
- (A) Net primary productivity. (B) Community productivity.
(C) Secondary productivity. (D) Primary productivity.

74. Arrange the following geological periods in correct order of their occurrence :

- (A) Permian - Devonian - Carboniferous - Jurassic - Triassic - Cretaceous.
- (B) Carboniferous - Devonian - Permian - Jurassic - Triassic - Cretaceous.
- (C) Carboniferous - Devonian - Permian - Triassic - Jurassic - Cretaceous.
- (D) Devonian - Carboniferous - Permian - Triassic - Jurassic - Cretaceous

75. Match the following :

Column I

Column II

- | | |
|-----------------|------------------------|
| (A) Psilotum | (I) Sporocarp. |
| (B) Marsilea | (II) Vallecular canal. |
| (C) Equisetum | (III) Spike moss. |
| (D) Selaginella | (IV) Synangium. |

- (a) A - III, B - I, C - II, D - IV.
- (b) A - III, B - II, C - I, D - IV.
- (c) A - IV, B - I, C - II, D - III.
- (d) A - I, B - II, C - IV, D - III.

76. DNA fingerprinting was discovered by :

- | | |
|-----------------------|---------------------|
| (A) Kary mullis. | (B) Alec Jeffreys. |
| (C) Beadle and Tatum. | (D) Daniel Nathans. |

77. Golden rice is a genetically modified rice, which is modified by inserting :

- | | |
|-----------------------------|-----------------------------|
| (A) Polygalacturonase gene. | (B) Biotin gene. |
| (C) Thiamine gene. | (D) β -Carotene gene. |

78. Auxin used in plant tissue culture :

- | | |
|--------------|------------------------|
| (A) Kinetin. | (B) Benzylaminopurine. |
| (C) IAA. | (D) Zeatin. |

79. DNA blotting technique is :

- (A) Southern blotting.
- (B) Northern blotting.
- (C) Western blotting.
- (D) None of the above.

80. Who is the father of genetic engineering ?

- (A) William French Anderson.
- (B) Jennifer Doudna.
- (C) Archibald Garrod.
- (D) Paul Berg.

81. Variable Number of Tandem Repeats (VNTR) also known as :

- (A) Mini-satellite.
- (B) Micro-satellite.
- (C) Simple sequence repeats.
- (D) ISSR.

82. Who first proved that DNA is the genetic material in living organisms ?

- (A) Watson and Crick.
- (B) Meselson and Stahl.
- (C) Hershey and Chase.
- (D) Frederick Griffith.

83. The species that invades a bare area are called :

- (A) Pioneer species.
- (B) Xerophytic species.
- (C) Lithophytic species.
- (D) Climax community.

84. Reaction centre in PS I :

- (A) P 700.
- (B) P 680.
- (C) P 780.
- (D) Both P 700 and P 680.

85. Which part of the cell act as the site for glycolysis ?

- (A) Mitochondria.
- (B) Cytoplasm.
- (C) Thylakoid.
- (D) Both mitochondria and cytoplasm.

Turn over

86. Which of the following is the correct sequence of movement of electrons in non-cyclic photophosphorylation ?
- (A) Water, P 680, cytochrome b6f complex, P 700, NADP.
 - (B) Water, P 700, cytochrome b6f complex, P 680, NADP.
 - (C) Water, NADP, P 680, cytochrome b6f complex, P 700.
 - (D) NADP, water, P 700, P 680, water, Cytochrome b6f complex.
87. The pH at which net charge of amino acids become zero is called :
- (A) Neutral pH.
 - (B) Compensation point.
 - (C) Isoelectric point.
 - (D) Denaturation point.
88. Which of the RNA polymerase is involved in the synthesis of mRNA ?
- (A) RNA polymerase I.
 - (B) RNA polymerase II.
 - (C) RNA polymerase III.
 - (D) RNA polymerase V.
89. Pendant inflorescence with unisexual flowers :
- (A) Spike.
 - (B) Catkin.
 - (C) Umbel.
 - (D) Coenanthium.
90. Who put forward the phylogenetic system of classification ?
- (A) Engler and Prantl.
 - (B) Bentham and Hooker.
 - (C) Huntchinson.
 - (D) Linnaeus.
91. Match the following flower parts with its homologies.

*Column I**Column II*

- | | |
|---------------|-------------------------|
| (A) Ovule | (I) Female gametophyte. |
| (B) Egg | (II) Megasporangium. |
| (C) Carpel | (III) Female gamete. |
| (D) Embryosac | (IV) Megasporophyll. |

(A) A – II, B – III, C – IV, D – I.

(B) A – I, B – III, C – IV, D – II.

(C) A – III, B – I, C – II, D – IV.

(D) A – III, B – I, C – IV, D – II.

92. International Plant Genetic Resources Institute (IPGRI) is located in :

(A) Manila, Philippines.

(B) Rome, Italy.

(C) Kew, England.

(D) Geneva, Switzerland

93. Persistent calyx is present in :

(A) Fabaceae.

(B) Liliaceae.

(C) Solanaceae.

(D) Malvaceae.

94. Pollination by the agency of snail :

(A) Malacophily.

(B) Myrmecophily.

(C) Ornithophily.

(D) Anemophily.

95. Anther lobes are fused together but filaments remains free in :

(A) Syngenesious.

(B) Synandrous.

(C) Monoadelphous.

(D) Monothealous.

96. Which of the following is an example of dry dehiscent fruit ?

(A) Berry.

(B) Hesperidium.

(C) Pepo.

(D) Capsule.

97. Perianth in Poaceae :

(A) Palea.

(B) Lemma.

(C) Lodicules.

(D) Glumes.

Turn over

98. C-2 epimer of D-glucose is :

(A) D- mannose.

(B) D- galactose.

(C) D- fructose.

(D) D- arabinose.

99. International Day of Forests :

(A) March 21.

(B) April 21.

(C) March 23.

(D) February 23.

100. Inverted 'Omega' shaped arrangement of vascular bundles are found in :

(A) Cycas root.

(B) Cycas leaflet.

(C) Cycas coralloid root.

(D) Cycas rachis.