C 21130 (Pages : 16) Name.....

Reg. No.....

P.G. ENTRANCE EXAMINATION, APRIL 2022

APPLIED PLANT SCIENCE

Time : Two Hours Maximum : 400 Marks

Each question carries 4 marks.
1 mark will be deducted for each wrong answer.

1. Meristematic tissues are found in :

   (a) In all growing tips of the plant body.

   (b) Both roots and stems.

   (c) Only stems of the plant.

   (d) Only roots of the plant.

2. Which of the following is an epidermal cell ?

   (a) Trichome. (b) Root hair.

   (c) Guard cell. (d) All of these.

3. Which of the following tissue has dead cells ?

   (a) Parenchyma. (b) Sclerenchyma.

   (c) Collenchyma. (d) Chlorenchyma.

4. The capillaries of collenchymas tissue become thick due to the deposition of :

   (a) Lignin and cutin. (b) Cellulose and lignin.

   (c) Cellulose and pectin. (d) Lignin and pectin.

5. Which organelle is absent in plant cell ?

   (a) Centrosome. (b) Cell wall.

   (c) Plastids. (d) Ribosomes.

6. Father of Medical Microbiology :

   (a) Louis Pasteur. (b) Robert Koch.

   (c) Martinus Beijernick. (d) Edward Jenner.

7. If you have one treatment variable. You are going to compare two or more samples. You wish to compare general and specific hypothesis. Then which statistical test should you use ?

(a) Z test.
(b) Scheirer- Ray- Hare test.
(c) One way ANOVA.
(d) Two way non-parametric ANOVA.

8. Which of the following is an example for rankable, interval, continuous, and quantitative data ?

(a) Percentage.
(b) pH.
(c) Grams.
(d) The number of prickles on leaves.

9. In an investigation into the visual responses of beetles, a number of coloured pitfall traps were placed at random in grassland. After 24 hrs the pitfall traps were collected and the number of beetles recorded. The results for each trap were red 20, yellow 34, white 10 and black 40. Which of the following is the expected value ?

(a) 26.
(b) 24.
(c) 22.
(d) 20.

10. With reference to geological time scale each era is divided into ———.

(a) Epoch.
(b) Period.
(c) Division.
(d) Era.

11. The So-called higher cryptogams include :

(a) Angiosperms.
(b) Gymnosperms.
(c) Pteridophytes.
(d) Bryophytes.

12. Match the following :

A. Selaginella uncinata	i. Golden clubmoss
B. S. Braunii	ii. Rock sipkemoss.
C. S. Kraussiana	iii. Peacock fern.
D. S. Rupestris	iv. Abortive fern.

(a) A-iv, B-ii, C-iii, D-i.
(b) A-ii, B-i, C-iii, D-iv.
(c) A-i, B-ii, C-iii, D-iv.
(d) A-iii, B- iv, C-i, D-ii.

13. Which of the following is not a fossil vascular plant?

(a) Rhynia. (b) Hornea.

(c) Lycopodium. (d) Asteroxylon.

14. How many leaves are present at each node of the rhizome of *Salvinia* ?

(a) 5. (b) 3.

(c) 2. (d) 1.

15. Who has authored the monograph entitled "Cyanophyta", a publication of ICAR ?

(a) R.N. Singh. (b) M.O.P. Iyengar.

(c) T.V. Desikachary. (d) Y. Bhardwaja.

16. "Sargasso sea", characterised by wide occurrence of *Sargassum*, is a part of :

(a) Bay of Bengal. (b) Atlantic Ocean.

(c) Indian Ocean. (d) None of these.

17. Which one is not the common name of *Spirogyra* ?

(a) Pond- scum. (b) Water-silk.

(c) Stonewort. (d) Mermaid's tresses.

18. Which of the following algae shows Heterotrichous habit ?

(a) *Volvox*. (b) *Oedogonium*.

(c) *Chlorella*. (d) *Fritschiella*.

19. The usual number of shield cells in the globule of *Chara* is :

(a) 10. (b) 8.

(c) 6. (d) 4.

20. Prokaryotic cell first appeared in :

(a) 3.9×10^5 years ago. (b) 3.5×10^7 years ago.

(c) 3.9×10^8 years ago. (d) 3.5×10^9 years ago.

21. Match the following :

A. Disaccharide	i. Ribose.
B. Fatty acid	ii. Adenosine.
C. Nucleoside	iii. Lactose.
D. Nucleotide	iv. Oleic acid.
E. Pentose sugar	v. Adenosine triphosphate.

(a) A- i, B- ii, C- iii, D- iv, E- v.

(b) A- iii, B- iv, C- ii, D- v, E- i.

(c) A- ii, B- i, C- iii, D- v, E- iv.

(d) A- iii, B- ii, C- v, D- iv, E- i.

22. Match the following :

A. 1737	I. John Burmen	i. Flora of India
B. 1819- 24	II. B. P. Pal	ii. Flora of Kashmir
C. 1835	III. William Roxburgh	iii. The saurus zeylanicus
D. 1966	IV. J. F. Royle	iv. The roses in India

(a) A-I-i, B-III-ii, C-IV-iii, D-II-iv.

(b) A-IV-iii, B-III-i, C-II-ii, D-I-iv.

(c) A-I-iii, B-III-i, C-IV-ii, D-II-iv.

(d) A-IV-i, B-III-ii, C-II-iii, D-I-iv.

23. Indian botanic garden, Howrah were founded in ——— by Colonel Robert Kyd.

(a) 1787. (b) 1793.

(c) 1774. (d) 1762.

24. About 35 to 40 % of the flowering plants are ———.

(a) Haploids. (b) Diploids.

(c) Triploids. (d) Polyploids.

25. Match the following :

A. Anomocytic	i. Caryophyllaceae
B. Anisocytic	ii. Rubiaceae.
C. Paracytic	iii. Solanaceae.
D. Diacytic	iv. Capparidaceae.

(a) A-ii, B-iii, C- i, D- iv.

(b) A-i, B-iii, C- iv, D- ii.

(c) A-iv, B-iii, C- ii, D- i.

(d) A-iii, B-i, C- iv, D- ii.

26. Mura-Drava-Danube (MDD), world's first five country biosphere', does not stretch across which of the given country ?

(a) Austria. (b) Slovania.

(c) Croatia. (d) Poland.

27. Keukenhof, one of the world's largest flower garden, is located in which country ?

(a) The Netherlands. (b) Germany.

(c) Ukraine. (d) Poland.

28. Which of the following species is classified as near threatened (in 2018) and as endangered species (in 2021), by IUCN ?

(a) *Pterocarpus santalinus.* (b) *Strobilanthes kunthiana.*

(c) *Actinodaphne Lawsoni.* (d) *Ilex Khasiana.*

29. 'Kaiser-i-Hind' is the official butterfly of which state ?

(a) Assam. (b) Arunachalpradesh.

(c) Manippur. (d) Meghalaya.

30. Consider the following statements :

1 IUCN is the largest professional global conservation network.

2 IUCN is headquartered in Nairobi, Kenya.

3 It is governed by a Council elected by member organizations every four years.

Which of the given statement/s are correct ?

(a) 1 and 2 only. (b) 2 only.

(c) 1 and 3 only. (d) 2 and 3.

31. Transfer of genetic material in bacteria through virus is termed as :

(a) Transduction. (b) Transformation.

(c) Transcription. (d) None of the above.

32. What is the Ph value of Saliva after meal ?

(a) 3.2. (b) 5.8.

(c) 6.7. (d) 7.

33. Which statement is correct regarding Buffer Solution ?

(a) It is a solution whose pH change when small amount of an acid or base is added in it.

(b) It is a solution whose pH does not change when small amount of an acid or base is added in it.

(c) It does not use pH value as constant in wide variety of chemical applications.

(d) The solution of methanoic acid is an example of effective buffer solution.

34. Liquid chromatography can be performed in which of the following ways ?

(a) Only in columns.

(b) Only on plane surfaces.

(c) Either in columns or on plane surfaces.

(d) Neither in columns nor on plane surfaces.

35. Parameters measured by Photometers ?

(a) Illuminance. (b) Light absorption.

(c) Irradiance. (d) All of the above.

36. Choose the correct sentence from the following :

1. TMV is made up of a piece of nucleic acid but there is no surrounding protein coat.
2. TMV is a rod shaped virus.
3. TMV can multiply only inside a living cell.
4. TMV cannot survive in dead tissue.

(a) Statements 1 and 2 are correct.

(b) Statements 2 and 3 are correct.

(c) Statements 2 and 4 are incorrect.

(d) Statements 1, 2 and 3 are correct.

37. Principle involved in streak plate method :

(a) Dilution. (b) Concentration.

(c) Precipitation. (d) Filtration.

38. Match the following :

A. *Pythium aphanidermatum*	i. Soft-rot of papaya.
B. P. *Myriotylum*	ii. Fruit Damping off seedling of tobacco.
C. P. *Graminicolum*	iii. Rhizome rot of ginger.
D. P. *Debayanum*	iv. Root rot of turmeric.

(a) A-i, B-iii, C-iv, D-i. (b) A- i, B-iv, C-iii, D-ii.

(c) A- ii, B-i, C-iv, D-iii. (d) A- ii, B-iv, C-iii, D-i.

39. Mesokaryotic cell organisation can be seen in :

(a) Cryptophyceae. (b) Chrysophyseae.

(c) Dinophyceae. (d) Rhodophyceae.

40. Which of the following species of *Puccinia* causes 'black stem rust' of wheat ?

(a) *P. Microspora.* (b) *P. Obliqua.*

(c) *P. Cladii.* (d) *P. Graminis.*

41. Which of the following is an example for foliose lichen ?

(a) *Parmelia*.
(b) *Rhizocarpon*.
(c) *Evernia*.
(d) *Cladonia*.

42. In the case of fungal-algal relation in lichens, the partnership is not a real case of symbiosis but is an example of ——— in another view.

(a) Mutualism.
(b) Parasitism.
(c) Ammensalism.
(d) Helotism.

43. Which of the following is commonly called 'Oakmoss Lichen' ?

(a) *Evernia prunastri*.
(b) *Peltigera canina*.
(c) *Cladonia cristatella*.
(d) *Lobaria pulmonaria*.

44. 'Taxonomy of Indian mosses' was authored by :

(a) S. D. Tewari.
(b) S. S. Kumar.
(c) R. S. Chopra.
(d) J. N. Vohra.

45. The mechanism of sex determination in plants was discovered for the first time in the liverwort ———.

(a) *Marchantia*.
(b) *Lunularia*.
(c) *Riccia*.
(d) *Sphaerocarpos*.

46. Which of the following statements about the anatomy of coralloid roots of *Cycas* is/ are Correct ?

A. Outer cortex composed of compactly arranged polygonal cells.

B. Inner cortex of thin- walled parenchyma cells.

C. Middle cortex which forms the algal zone.

D. Algal spaces occupied by blue-green algae.

(a) A and B.
(b) A, C and D.
(c) B, C and D.
(d) A, B, C and D.

47. Match the following :

A. Monofoliar	i. *Pinus sylvestris.*
B. Bifoliar	ii. *P. Monophylla.*
C. Trifoliar	iii *P. Wallichiana.*
D. Pentafoliar	iv. *P. Longifolia.*

(a) A-ii, B-iv, C- iii, D-i. (b) A-i, B-ii, C- iv, D-iii.

(c) A-ii, B-i. C-iv, D-iii. (d) A-ii, B-iv, C- i, D-iii.

48. Primary suspensor tube divides and produces a chain of cells which grow laterally and produce additional normal embryos is called :

(a) Cleavage polyembryony. (b) Simple polyembryony.

(c) Normal polyembryony. (d) Lateral polyembryony.

49. Find out the odd one from the following ?

(a) Orange G. (b) Eosin.

(c) Hematoxylin. (d) Fast green.

50. Fast green is an example of ——— ?

(a) Natural stain. (b) Acidic stain.

(c) Basic stain. (d) Neutral stain.

51. Match the following :

1. Black gram	A. *Vigna unguiculata.*
2. Cowpea	B. *Vigna radiata.*
3. Bengal gram	C. *Cicer arietinum.*
4. Green gram	D. *Vigna mungo.*

(a) 1-D, 2-A, 3-C, 4-B.

(b) 1-D, 2-C, 3-B, 4-A.

(c) 1-C, 2-D, 3-A, 4-B.

(d) 1-C, 2-B, 3-D, 4-A.

52. CD is ——— ?

(a) Hard disk.
(b) Blu-ray.
(c) Thumb drive.
(d) Optical disc.

53. NCBI is a :

(a) Primary database.
(b) Secondary database.
(c) Composite database.
(d) None of these.

54. Which of the following is not functional genomics ?

(a) Transcriptomics.
(b) Genome sequencing.
(c) Proteomics.
(d) Metabolomics.

55. Cladogram represents :

(a) Arbitrary branch length.
(b) Common ancestory.
(c) Number.
(d) Scaled branch length.

56. The complete set of DNA of an organism is called :

(a) Genome.
(b) Genomics.
(c) Genetic code.
(d) Gene.

57. Orthologous sequence arises due to :

(a) Deletion.
(b) Insertion.
(c) Speciation.
(d) Gene duplication.

58. HTML is :

(a) HyperText Markup Language.
(b) HypoText Markup Language.
(c) HyperText Making Language.
(d) None of these.

59. An autonomous Inter university Centre of UGC is ———.

(a) ARPANET.
(b) BRNet.
(c) INFLIBNET.
(d) LMS.

60. Multiple sequence alignment is performed for :

(a) Nucleotide sequence. (b) Protein sequence.

(c) Expressed sequence tag. (d) All the above.

61. Elaters of *Equisetum* are formed from :

(a) Exospore. (b) Perispore.

(c) Mesospore. (d) Endospore.

62. Match the following :

1. *Psilotum*	A. Ectophloic siphonostele	i. Sporocarp.
2. *Marsilea*	B. Protostele	ii. Carinal canal.
3. *Equisetum*	C. Amphiphloic siphonostele	iii. Synangium.

(a) 1-B-ii, 2-C-i, 3-A-ii. (b) 1-A-iii, 2-C-ii, 3-B-i.

(c) 1-C-i, 2-B-iii, 3-A-ii. (d) 1 -B-i, 2-A-ii, 3-C-iii.

63. Match the following :

1. Palaeozoic	A. Cretaceous i.	Age of cycads
2. Mesozoic	B. Tertiary ii.	Age of angiosperms
3. Coenozoic	C. Permean iii.	Age of seed ferns

(a) 1-C-iii, 2-A-i, 3-B-ii. (b) 1-B-ii, 2-C-i, 3-A-iii.

(c) 1-A-iii, 2-B-i, 3-C-ii. (d) 1-C-iii, 2-A-ii, 3-B-i.

64. Match the following :

1. Anemophily
2. Entomophily
3. Hydrophily
4. Chiropterophily

A. *Vallisneria*.
B. Maize.
C. Adansonia.
D. Sunflower.

(a) 1-D, 2-A, 3-C, 4-B.

(b) 1-B, 2-D, 3-A, 4-C.

(c) 1-C, 2-D, 3-A, 4-B.

(d) 1-A, 2-C, 3-B, 4-D.

65. FCR Test to assess pollen viability was introduced by :

(a) Heslop- Harrison.
(b) K. Ruckwied.
(c) J. Agrant.
(d) S. J. Fowell.

66. Which of the following is/are X-linked human traits :

A. Color blindness.
B. Diabetes insipidus.
C. Deafness.
D. Cleft palate.

(a) A and B.
(b) A, B and C.
(c) B, C and D.
(d) A, B, C and D.

67. Match the following :

A. Edward's syndrome	i. Trisomy 21.
B. Patau's syndrome	ii. Trisomy 18.
C. Down's syndrome	iii. Sex chromosomal trisomy.
D. Turner's syndrome	iv. Trisomy 13.

(a) A- i, B- iv, C-ii, D-iii.
(b) A-iv, B-ii, C-i, D-iii.
(c) A- ii, B- iv, C-i, D-iii.
(d) A- iii, B- iv, C-ii, D-i.

68. Natural selection theory of Darwin is objected, because it :

(a) Stresses upon slow and small variations.
(b) Stresses upon interspecific competition.
(c) Explains that natural calamities take a heavy annular toll of lives.
(d) Explains, adaptation of certain inherited characters.

69 Type II error in hypothesis testing is :

(a) Acceptance of the null hypothesis when it is false and should be rejected.
(b) Rejection of the null hypothesis when it is true and should be accepted.
(c) Rejection of the null hypothesis when it is false and should be rejected.
(d) Acceptance of the null hypothesis when it is true and should be accepted.

70. A fair dice is rolled twice. The probability that an odd number will follow an even number is :

(a) 1/2. (b) 1/3.

(c) 1/4. (d) 1/6.

71. Which of the following polysaccharide is composed of β-glycosidic bonds ?

(a) Starch. (b) Glycogen.

(c) Dextrin. (d) Cellulose.

72. Esterification of cholesterol occurs at carbon position :

(a) 1. (b) 2.

(c) 3. (d) 4.

73. The reaction given by two or more peptide linkage is :

(a) Biuret test. (b) Ninhydrin test.

(c) Xanthoproteic test. (d) Pauleys test.

74. The nucleotide that serves as an intermediate for biosynthetic reaction :

(a) UDP- Glucose. (b) CDP- Acylglycerol.

(c) S-Adenosylmethionine. (d) All of them.

75. The vitamin containing isoalloxazine ring :

(a) Riboflavin. (b) Vitamin A.

(c) Vitamin D. (d) Vitamin E.

76. Inner mitochondrial membrane is permeable to :

(a) H^+. (b) K +.

(c) OH –. (d) All of them.

77. Match the following :

Name	Enzyme defect	Organ(s) involved
A. Type I glycogenosis	I. Amylo -1,6- glucosidase	i. Liver, muscle, muscle, heart and leucocytes
B. Andersons disease	II. Phosphofructokinase	ii. Skeletal muscle, erythrocytes
C. Tarui's disease	III. Glucose- 6- phosphatase	iii. Liver, Kidney and Intestine
D. Cori's disease	IV. Glucosyl 4, 6- transferase	iv. Most tissues

(a) A-III-iii, B-IV-iv, C-II-ii, D-I-i.

(b) A-II-i, B-I-ii, C-IV-iii, D-III-iv.

(c) A-III-ii, B-IV-iii, C-I-iv, D-II-i.

(d) A-IV-iv, B-I-i, C-II-ii, D-III-iii.

78. The hormone that lowers cAMP concentration in liver cells is :

(a) Glucagon. (b) Insulin.

(c) Epinephrin. (d) Thyroxine.

79. The amino acid required for the formation of glutathione :

(a) Glycine. (b) Cysteine.

(c) Glutamate. (d) All of them.

80. The metabolic water is derived by the oxidation of :

(a) Carbohydrate. (b) Fats.

(c) Protein. (d) All of them.

81. The enzyme responsible for the synthesis mRNA's in eukaryotic cells :

(a) RNA Polymerase I. (b) RNA Polymerase II.

(c) RNA Polymerase III. (d) RNA Polymerase α.

82. The enzyme peptidyl transferase catalyses the formation of peptide bond during translation. The chemical nature of this enzyme is :

(a) Protein. (b) rRNA.

(c) Protein + Lipid. (d) None of the above.

83. The structural 'Z' gene of Lac Operon is responsible for the synthesis of _____.

(a) B- Galactosidase. (b) Permease.

(c) Acetylase. (d) All of them.

84. The specific control of transcription involves the following motif(s) :

(a) Helix-turn-helix. (b) Zinc Finger.

(c) Leucine zipper. (d) All of them.

85. Which of the following is the recognition sequence of Hind III ?

(a) 5 ' AAGCTT 3 '

3' TTCGAA 5'

(b) 5' GAATTC 3'

3' CTTAAG 5'

(c) 5' GCATCG 3'
3' CGTAGC 5'

(d) 5' TTACGC 3'
3' AATGCG 5'

86. Name the blotting technique in which nucleic acids are directly blotted onto the filters without electrophoresis.

(a) Western blotting. (b) Southern blotting.

(c) Northern blotting. (d) Dot blotting.

87. One of the following enzyme produces single- stranded nicks in DNA :

(a) DNA Ligase. (b) DNA Polymerase.

(c) DNase I. (d) SI Nuclease.

88. Genetic immunization involves the administration of :

(a) Antigens. (b) Antibodies.

(c) DNA. (d) RNA.

89. Nodules are found in which of the following non-leguminous plants ?

(a) *Alnus*. (b) *Myrica*.

(c) *Casuarina*. (d) All of the above.

90. Transpiration ratio is the :

(a) Moles H_2O transpired/ Moles CO_2 assimilated.

(b) Moles CO_2 transpired/ Moles H_2O assimilated.

(c) Moles H_2O transpired/ Moles O_2 assimilated.

(d) Moles O_2 transpired/ Moles H_2O assimilated.

91. Hatch- Slack pathway is also called :

(a) C_2 Cycle. (b) C_3 Cycle.

(c) C_4 Cycle. (d) Krebs Cycle.

92. The turnover number of Catalase is :

(a) 10^7. (b) 2×10^7.

(c) 3×10^7. (d) 4×10^7.

93. Which of the following statements about cyclic electron transport and photophosphorylation is/ are INCORRECT :

A. Associated with pigment system I.

B. NADP+ is reduced.

C. Photolysis of water and evolution of O_2 do not take place.

D. Phosphorylation takes place at two places.

(a) A and B. (b) A only.

(c) B only. (d) C and D.

94. In vernalization, cold stimulus is perceived by :

(a) Lateral meristems. (b) Intercalary meristems.

(c) Apical meristems. (d) All of the above.

95. In corn, kernel color is governed by a dominant allele for white color (W) and by a recessive allele (w). A random sample of 100 kernels from a population that is in Hardy-Weinberg equilibrium reveals that 9 kernels are yellow (ww) and 91 kernels are white. What are the frequencies of the yellow and while alleles in this population.

(a) w = 0.30 and W = 0.70. (b) w = 0.70 and W = 0.30.

(c) w = 0.60 and W = 0.40. (d) w = 0.40 and W = 0.60.

96. Which of the following function is INCORRECT regarding Cytokinin ?

(a) Promote cell division. (b) Delay senescence.

(c) Induce dormancy. (d) Counteract apical dominance.

97. In tissue culture, low cytokonin to auxin ratio causes :

(a) Root differentiation. (b) Shoot differentiation.

(c) Both (a) and (b). (d) None of the above.

98. Which are the two electron carriers acts as hydrogen acceptors during Krebs cycle ?

(a) NAD. (b) FAD.

(c) NADH. (d) Both (a) and (b).

99. Competitive inhibitor of the activity of enzyme succinic dehydrogenase is :

(a) Malonic acid. (b) Succinic acid.

(c) Fumaric acid. (d) None of the above.

100. If an enzyme substrate system has lower value of K_m then binding of substrate to its enzyme will be :

(a) More strong. (b) Less strong.

(c) Inhibited. (d) None of the above.