COMMON P.G. ENTRANCE TEST – 2021 (CPET-2021)

Test Booklet No.: 108321

HIGHER EDUCATION DEPARTMENT, GOVT. OF ODISHA

TEST BOOKLET

Subject Code : **13**

Entrance Subject : **BOTANY**

Time Allowed: 90 Minutes

Full Marks : 70

INSTRUCTIONS TO CANDIDATES

1. **Please do not open this Question Booklet until asked to do so.**
2. Check the completeness of the Question Booklet immediately after opening.
3. Enter your **Hall Ticket No.** on the Test Booklet in the box provided alongside. **Do not** write anything else on the Test Booklet.
4. Fill up & darken Hall Ticket No. & Test Booklet No. in the Answer Sheet as well as fill up Test Booklet Serial No. & Answer Sheet Serial No. in the Attendance Sheet carefully. Wrongly filled up Answer Sheets are liable for rejection.
5. Each question has four answer options marked (A), (B), (C) & (D).
6. Answers are to be marked on the Answer Sheet, which is provided separately.
7. Choose the most appropriate answer option and darken the oval completely, corresponding to (A), (B), (C) or (D) against the relevant question number.
8. Use only **Blue/Black Ball Point Pen** to darken the oval for answering.
9. Please do not darken more than one oval against any question, as scanner will read such markings as wrong answer.
10. **Each question carries equal marks. There will be no negative marking for wrong answer.**
11. **Electronic items such as calculator, mobile, etc., are not permitted inside the examination hall.**
12. *Don't leave the examination hall until the test is over and permitted by the invigilator.*
13. **The candidate is required to handover the original OMR sheet to the invigilator and take the question booklet along with the candidate's copy of OMR sheet after completion of the test.**
14. Sheet for rough work is appended in the Test Booklet at the end.

1. The alga with multinucleated and siphonous vegetative thallus is

   (A) *Oedogonium*

   (B) *Vaucheria*

   (C) *Fucus*

   (D) *Polysiphonia*

2. When the DNA of a phage is transmitted to the host, there is a temporary period of disappearance of infectivity. Such period is called

   (A) Eclipse period

   (B) Incubation period

   (C) Latent period

   (D) Lag period

3. The sexual reproduction in lichen involves

   (A) Both algal and fungal partners

   (B) Fungal partner only

   (C) Algal partner only

   (D) None of these

4. Which of the following is a function of the suspensor of an embryo

   (A) Provide mechanical support to the developing embryo

   (B) Push the embryo deep into the endosperm

   (C) Absorb nutrients

   (D) Develop additional proembryo

5. In an aquatic ecosystem, the highest population of organisms belongs to

   (A) Phytoplankton

   (B) Aquatic weeds

   (C) Small fish

   (D) Zooplankton

6. In a plant cell, the non-cellulosic polycaccharides, pectins, lignins and phenolic substances are present in

   (A) The primary cell wall

   (B) The middle lamella

   (C) The inter-wall space

   (D) The entire cell wall

7. The "primary centres of origin" and "secondary centres of diversity" of crop plants were proposed by

(A) N.I.Vavilov

(B) G. Harlan

(C) L.I. Zukovski

(D) G.W.Hawkes

8. The effects of ethylene can be inhibited by increasing the

(A) Light intensity

(B) CO_2 concentration

(C) Water stress

(D) Nutrient supply

9. Crossing over in diploid organisms is responsible for

(A) Dominance of genes

(B) Appearance of parental types in the next generation

(C) Segregation of alleles

(D) Recombination of linked alleles

10. Two bacteria found to be very useful in genetic engineering experiments are

(A) *Nitrosomonas and Escherichia*

(B) *Escherichia and Agrobacterium*

(C) *Agrobacterium and Nitrobactor*

(D) *Rhizobium and Agrobacterium*

11. The sexual reproduction is of isogamous type in some species of the genus

(A) *Chlamydomonas*

(B) *Vaucheria*

(C) *Oedogonium*

(D) *Chara*

12. Amphithecial origin of sporogenous tissues is seen in the sporophytes of

(A) *Riccia*

(B) *Marchantia*

(C) *Pelia*

(D) *Funaria*

13. The cortex of dicot stem is derived from

(A) Dermatogens

(B) Periblem

(C) Plerome

(D) Calyptrogens

14. A taxonomic key, that is prepared dichotomously taking one or more character(s) dichotomy is called a

(A) Single access key

(B) Double access key

(C) Multi-access key

(D) Characterized key

15. In a distribution with a mean and standard deviation of 40 and 2, respectively, the coefficient of variation will be

(A) 5%

(B) 8%

(C) 2.8%

(D) 0.8

16. In ground nut seeds, the food is reserved as protein and oil droplets in the

(A) Endosperm

(B) Seed coat

(C) Cotyledons

(D) Embryonal axis

17. The activation of a fatty acid through ATP-dependent conversion to fatty acyl CoA is catalyzed by

(A) Lipokinase

(B) Fatty acyl ATPase

(C) Thiokinase

(D) Acyl-CoA kinase

18. Which of the following is a class of simple proteins?

(A) Phosphoproteins

(B) Scleroproteins

(C) Glycoproteins

(D) Flavoproteins

19. Which of the following is a strong mutagen?

(A) Methane

(B) Caffeine

(C) Opium

(D) Carbon tetrasulphide

20. Which of the following statements is not true about the DNA replication processes?

(A) DNA polymerase α synthesizes primer in eukaryotes

(B) DnaG synthesizes primer in prokaryotes

(C) Loading and activation of helicase in G1 phase

(D) The new DNA is synthesized semiconservatively

21. Which of the following is not caused by *Rhizopus*?

(A) Spoilage of food

(B) Deterioration of articles

(C) Degradation of litters

(D) Production of antibiotics

22. During the sexual reproduction cycle of *Marchantia*. reduction division takes place at the time of

(A) Gametogenesis

(B) Antherial and archegonial development

(C) Sporogenesis

(D) Spore germination

23. Two neighbouring tracheids and vessels exchange sap flow through

(A) Perforated end walls

(B) Intercellular spaces

(C) Parenchyma

(D) Pits

24. When more than one specimen or illustration are cited by an author as the nomenclatural types, without designation of a holotype, such designated types are called

(A) Isotypes

(B) Epitype

(C) Syntype

(D) Lectotype

25. In a sample with 25 replicates and a standard error of 0.16, the variance of the sample will be

(A) 0.04

(B) 1.60

(C) 0.80

(D) 2.56

26. Which of the following characters is not useful for identification of an individual chromosome?

(A) Length of the chromosome

(B) Arm ratio

(C) Position of the secondary constriction

(D) Mitotic index

27. The amino acids, that is coded by a single codon, is

(A) Methionine

(B) Phenylalanine

(C) Tyrosine

(D) Aspargine

28. Which of the following is not required during β-oxidation of fatty acids?

(A) $FADH_2$

(B) $NADH+H^+$

(C) ATP

(D) CoASH

29. When chromosomal aberration occurs is both the homologues, it is classified as

(A) Homosomal

(B) Homobranchial

(C) Heterosomal

(D) Allelosomal

30. Presence of an Internal Ribosome Entry Site (IRES) in eukaryotic mRNA

(A) Stop translation

(B) Promotes its translation under adverse condition by recruiting new ribosomes

(C) Stimulates RNA editing of newly synthesized mRNA

(D) Block the entry of ribosome when the translation process is on

31. The ascus develops from the tip of an ascogeneous hyphae by crozier formation in

(A) *Mucor*

(B) *Rhizopus*

(C) *Penicillium*

(D) *Neurospora*

32. The leaves of Pteris is

(A) Simple

(B) Scaly and membranous

(C) Pinnately compound

(D) Fleshy and succulent

33. The adaptive anomalous secondary growth of stem is seen in

(A) *Bignonia*

(B) *Dracaena*

(C) *Mirabilis*

(D) *Chenopodium*

34. The variance among the replicates of a sample is not required to be determined for estimation of

(A) F –value

(B) coefficient of variation

(C) t –value

(D) Chi square value

35. Which of the following provides the signal to the ribosome for the attachment of the release factor?

(A) The terminal amino acid

(B) The length of the polypeptide

(C) The termination codon

(D) The t-RNA that brings in the last amino acid

36. During photorespiration, oxygen is consumed in

(A) Cytosol

(B) Chloroplast

(C) Peroxisome

(D) Mitochondria

37. Which of the following pigments is not responsible for harvesting light for photosynthesis?

(A) Chlorophylls

(B) Phycobiliproteins

(C) Carotenes

(D) Cryptochromes

38. The enzymes of TCA cycle are located in

(A) Cytoplasm

(B) Mitochondrial matrix

(C) Inner mitochondrial membrane

(D) Perimitochondrial space

39. Which of the following methods of chemical transfectants is not used for transfection?

(A) Calcium phosphate

(B) DEAE dextran

(C) Cation lipids

(D) Pyrophosphate

40. Adelphous stamens, superior ovary and actinomorphic flowers are the characteristics of the family

(A) Fabaceae

(B) Rosaceae

(C) Poaceae

(D) Malvaceae

41. Which of the following group of bacteria grow like branched fungal mycelia structures?

(A) Actinomycetes

(B) Cocci

(C) Spirillum

(D) Bacilli

42. The sporangia in the sporophylls of Selaginella are

(A) Homosporous and sporophytic

(B) Heterosporous and sporophytic

(C) Homosporous and gametophytic

(D) Heterosporous and gametophytic

43. Formation of the middle layer of the anther wall by the secondary parietal tissues is the characteristics of

(A) Dicots

(B) Orchids

(C) Grasses

(D) Commelinids

44. Dicots have been segregated into Lignosae and Herbaceae in the classification proposed by

(A) Bentham and Hooker

(B) Hutchinson

(C) APG

(D) Engler and Prantl

45. Which of the following reaction step is an energy yielding step during glycolytic break down of glucose to pyruvate?

(A) 1, 3- bisphosphoglycerate to 3-phosphoglycerate

(B) 3- phosphoglycerate to 2-phosphoglycerate

(C) Glucose-6-phosphate to fructose-6-phosphate

(D) 2-phosphoglycerate to enolpyruvate

46. A sense strand with sequence AATGCGATGGCT will code for a m-RNA with codons

(A) UUA CGG UAG CGA

(B) UUA CGC UAC CGA

(C) UUA CGG UAC CGT

(D) UUA CGG UGA CGU

47. In C3 cycle, the energy utilization for conversion of one carbon dioxide molecule to organic carbon is

(A) 2 ATP and 1 NADPH

(B) 18 ATP and 12 NADPH

(C) 3 ATP and 2 NADPH

(D) 2 ATP and 2 NADPH

48. The types of genotypes in the offspring by selfing of parents with allelic constitution AaBbccDdEE will be

(A) 243

(B) 32

(C) 27

(D) 8

49. The *Pneumococcus* experiment proved that

(A) DNA is the genetic material

(B) RNAS are involved in DNA replication

(C) Proteins are contagious

(D) Pneumococci do not reproduce sexually

50. A bacterial chromosome contains 100 kbp DNA and six restriction sites. By restriction digestion and gel electrophoresis, the fragments would be ~24kbp, ~22kbp, ~21kbp, 17 kbp, 11kbp and

(A) 4kbp and 1 kbp

(B) 5kbp

(C) 3kbp and 2 kbp

(D) 4 kbp

51. Mycoplasma differs from bacteria in not possessing the

(A) Cell wall

(B) Filamentous structure

(C) DNA as genetic material

(D) Penicillin resistance

52. The helical symmetry of capsids is seen in

(A) T2-phage

(B) Poliovirus

(C) Retrovirus

(D) Tobacco mosaic virus

53. Which of the following statement is not correct for Cycas?

(A) The zygote forms the free nuclear pro-embryo

(B) The endosperm contains the female gametophytic cells

(C) The suspensor pushes the proembryo deep into the endosperm

(D) Embryo differentiates several cotyledons

54. Formation of winged pollen grains is the characteristic feature of

(A) *Cycas*

(B) *Gnetum*

(C) *Ephedra*

(D) *Pinus*

55. A sixteen nucleated embryo sac with three celled egg apparatus and eleven antipodals is of

(A) Plubmago type

(B) Drusa type

(C) Peperomia type

(D) Plumbagella type

56. The outermost layer of endosperm of maize grain is called

(A) Tapetum

(B) Periplasm

(C) Epidermis

(D) Aleurone

57. The study of the ecological behaviour of a group of species in an ecosystem is called

(A) Autoecology

(B) Synecology

(C) Population dynamics

(D) Community dynamics

58. Which of the following is a negative interaction between populations?

(A) Competition

(B) Synergism

(C) Commensalism

(D) Syntrophy

59. The Albugo infection causes

(A) Rust in wheat leaves

(B) Rust in rice stem

(C) White rust in crucifers

(D) Leaf spot in ground nut

60. Which of the following is not a functional group in biomolecules?

(A) –COO-

(B) C=O

(C) –SH

(D) C=C

61. During active transport in plant cells, the ions are transported across the membrane by

(A) A concentration gradient

(B) An electrochemical gradient

(C) The function of the carriers

(D) Diffusion

62. The rate of absorption of water is slow at a temperature near the freezing point because

(A) Cell membrane becomes more viscous

(B) Water around root zone freezes

(C) Transpiration is retarded

(D) Soil nutrients form complexes

63. A cell was measured as 600 µm in diameter under microscope with 40x objective and 10x eye piece. The actual diameter of the cell was

(A) 1.5 µm

(B) 15 µm

(C) 25 µm

(D) 2.5 µm

64. The molar mass of a macromolecule can be determined by

(A) HPLC

(B) GLC

(C) SDS-PAGE

(D) AAS

65. Which of the following statements is true about RNA?

(A) mRNA is the most unstable form

(B) mRNA is largest among RNAs

(C) tRNA is largest among RNAs

(D) rRNA undergoes dynamic changes

66. The prerequisites for biotechnological production of transgenics does not include

(A) Identification of the target gene

(B) Isolation of the target gene

(C) Integration of the gene to the vector

(D) Artificial production of the gene

67. Nucleic acid labelling and identification can be done by the following except

(A) ^{32}P

(B) Texas red

(C) Fluorescine

(D) Ribose sugar

68. Pribnow box is the -10 box in the bacterial promoter region having the consensus sequence

(A) TATAAT

(B) GATAAG

(C) ATAATA

(D) AGTAAG

69. Which of the following is a gaseous biogeochemical cycle?

(A) Nitrogen

(B) Sulphur

(C) Potassium

(D) Phpsphorus

70. The transition zone between two different communities is called

(A) Biome

(B) Ecotone

(C) Ecotype

(D) Transition block

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