

COMMON P.G. ENTRANCE TEST 2021  
SUBJECT – BOTANY

1. The alga with non-motile vegetative thallus is
  - A) *Chlamydomonas*
  - B) *Volvox*
  - C) *Eudorina*
  - D) *Oedogonium*
2. Which of the following is a process in bacteria to withstand the unfavourable conditions?
  - A) Binary fission
  - B) Conjugation
  - C) Genetic transformation
  - D) Endospore formation
3. Stem of which of the following pteridophytes possesses the cranial and valecular canals?
  - A) *Lycopodium*
  - B) *Selaginella*
  - C) *Equisetum*
  - D) *Pteris*
4. The fascicular cambium found in the vascular bundles of dicot stem is
  - A) Primary meristem
  - B) Secondary meristem
  - C) Apical meristem
  - D) Intercalary meristem
5. An endosperm having irregular boundary is called
  - A) Irregular endosperm
  - B) Cellular endosperm
  - C) Helobial endosperm
  - D) Ruminant endosperm
6. Which of the following characters is a feature of the members of the family Rubiaceae?
  - A) Apocarpous ovary with axile placentation
  - B) Interpetiolar stipules
  - C) Adelphous and basifixed stamens
  - D) Minute unisexual flowers
7. When two random samples are drawn from a heterogeneous population, the differences between the samples is expected to be
  - A) Present and insignificant
  - B) Absent
  - C) Present and significant
  - D) Can not be determined
8. Downy mildew of Jawar is caused by the fungus
  - A) *Erysiphe sorghi*

- B) *Sclerospora sorghi*
- C) *Sphacelotheca sorghi*
- D) *Ustilago hordei*

9. A sense strand with sequence GATGCCATGGCT will code for a m-RNA with codons

- A) CUA CGG UAC CGA
- B) UUA CGG UAC CGA
- C) CUA CGG UAC CGT
- D) CUA CGC UGA CGA

10. Which of the following organelles is the site for conversion of glycine to serine during photorespiration?

- A) Chloroplast
- B) Mitochondria
- C) Peroxisome
- D) Glyoxisome

11. Which of the following is a conjugate protein?

- A) Keratin
- B) Glutenin
- C) Gliadin
- D) Casein

12. Which of the following radioisotopes is not used in biological research?

- A)  $^{14}\text{C}$
- B)  $^{15}\text{N}$
- C)  $^{32}\text{P}$
- D)  $^2\text{H}$

13. The length of Okazaki fragments in eukaryotes is approximately

- A) 10-20 bp
- B) 150-200 bp
- C) 300-500bp
- D) 1000-1200 bp

14. Find the correct statement about *Agrobacterium* sp.

- A) *A. tumefaciens* causes cane gall
- B) *A. rhizogenes* causes crown gall
- C) *A. tumefaciens* causes crown gall
- D) *A. rhizogenes* causes little roots

15. During sexual reproduction, the formation of carposporophyte is a characteristic feature of the genus

- A) *Vaucheria*
- B) *Polysiphonia*
- C) *Ectocarpus*
- D) *Zygnema*

16. Identify the correct statement from among the followings

- A) T-phages are the DNA containing viruses
- B) TMV has two strands of ss RNA as genetic material

- C) TMV has a single strand of ds RNA as genetic material  
D) A T-phage contains two pieces of dsDNA
17. In *Selaginella*, the microsporangia and megasporangia are borne on  
A) Sori without inducium  
B) Leaf axes without strobilar arrangement  
C) Same strobilus  
D) Sori with inducial covering
18. Callose is a polysaccharide in the form of  $\beta$ -1,3-glucan and is present in  
A) Sieve cells  
B) Tracheids  
C) Companion cells  
D) Phloem parenchyma
19. Perisperm is a remnant of the  
A) Nucellus  
B) Ovary wall  
C) Outer tapetum  
D) Gametophyte tissues around ovule
20. Which of the following is not a characteristic feature of xerophytes?  
A) Presence of spongy parenchyma in the stem  
B) Multiple hypodermal layers in the cortex  
C) Reduced and thick leaves  
D) Well developed root system
21. In a sample with 40 replicates, the frequency of the median class and the cumulative frequency before the median class are 12 and 14, respectively. The median frequency class has a magnitude of 4 and lowest value of 18. The median of the sample will be  
A) 19  
B) 20  
C) 21  
D) 22
22. The alleles that produce independent heterozygous condition are called  
A) Supplementary  
B) Complementary  
C) Epistatic  
D) Co-dominant
23. In which of the state variable of the biogeochemical cycle the amount of nitrogen is maximum?  
A) Biomass  
B) Ocean water  
C) Atmosphere  
D) Soil
24. In  $C_4$  cycle, phosphoenolpyruvate is converted to oxaloacetate in  
A) Cytosol of bundle sheath cells  
B) Chloroplast of mesophyll cells

- C) Cytosol of mesophyll cells  
 D) Chloroplast of bundle sheath cells
25. In  $C_3$  cycle, conversion of ribulose 5 phosphate to ribulose 1,5-bis phosphate requires
- A) Inorganic phosphate  
 B) ADP  
 C) ATP  
 D) pyrophosphate
26. When no linkage is observed between two genes, the percentage of parental types in the next generation will be
- A) 0%  
 B) 10%  
 C) 50%  
 D) 100%
27. Which of the following is not a part of t-RNA?
- A) Amino acid binding loop  
 B) Acceptor arm  
 C) Anticodon arm  
 D) T $\psi$ C arm
28. Choose the correct pair for Restriction endonuclease (RE):
- A) Type I RE – single recognition site  
 B) Type II RE - homodimer  
 C) Type III RE - requires ATP  
 D) Type II RE – methylation beyond recognition site
29. The gametangial fusion and formation of zygospores are seen in the genus
- A) *Albugo*  
 B) *Rhizopus*  
 C) *Penicillium*  
 D) *Puccinia*
30. When a phage DNA is incorporated into the bacterial genome, the constitute is known as
- A) Pseudophage  
 B) Latent phage  
 C) Silent phage  
 D) Prophage
31. Which of the following statements is not true for *Pinus*?
- A) The microsporophylls and megasporophylls are borne on separate cones  
 B) The microspores are metamorphosed into winged pollens  
 C) The embryo differentiates many cotyledons  
 D) The endosperm is triploid in nature
32. The non-adaptive type of anomalous secondary growth is seen in the stem of
- A) *Bignonia*  
 B) *Dracaena*  
 C) *Boerhaavia*

- D) Beet root
33. Flowers are sessile in the members of the family
- A) Poaceae
  - B) Rosaceae
  - C) Orchidaceae
  - D) Malvaceae
34. When the vegetation of any region reaches the climatic climax, it is
- A) Xerophytic
  - B) Hydrophytic
  - C) Epiphytic
  - D) Mesophytic
35. The difference between the means of two samples is required while calculating the
- A) F -value
  - B) Coefficient of variation
  - C) t -value
  - D) Chi square value
36. Which of the following is used as a UV light source in a UV-Vis spectrophotometer?
- A) Sodium lamp
  - B) Mercury lamp
  - C) Deuterium lamp
  - D) Infra red lamp
37. Which of the following is an old world crop plant?
- A) Wheat
  - B) Maize
  - C) Sweet potato
  - D) Potato
38. When starch is converted to sugar in the guard cells, the size of the stomatal aperture
- A) Increases by pulling pressure from the surrounding mesophylls
  - B) Increases by increase in the turgidity of guard cells
  - C) Decreases by pushing pressure from the surrounding mesophylls
  - D) Decreases by decrease in size of guard cells
39. The phytochrome pigments are responsible for
- A) Fluorescence
  - B) CO<sub>2</sub> fixation
  - C) Glycogenolysis
  - D) Photomorphogenesis
40. Continuous variation in a population is attributed to
- A) Rapid chromosomal aberration
  - B) Spontaneous aneuploidy
  - C) Small mutations
  - D) Polyploidy

41. DNA fragments which can switch their positions are
- A) Exons
  - B) Introns
  - C) Cistrons
  - D) Transposons
42. Find the correct pair for transgenic plants
- A) Golden rice- sunflower gene
  - B) Bt cotton- Cry/Ac gene
  - C) Bt brinjal-luciferase gene
  - D) Super rice-daffodil gene
43. Which of the following is a dikaryotic spore in the life cycle of *Puccinia*?
- A) Teleutospore
  - B) Basidiospore
  - C) Pycniospore
  - D) Uredospore
44. Which of the following is not a member of liverworts?
- A) *Riccia*
  - B) *Marchantia*
  - C) *Pelia*
  - D) *Funaria*
45. In spite of the presence of several angiospermic features, *Gnetum* is not treated as an angiosperm because
- A) There is no formation of fruit
  - B) Prothelical cells are not present
  - C) The stem has primitive xylem vessels
  - D) Poly-embryony is a common feature
46. In the monocot type of development of anther wall, the middle layer arise from the
- A) Outer parietal tissues
  - B) Inner parietal tissues
  - C) Entire parietal zone
  - D) The hypodermal cells
47. A specimen, selected from among the isotypes to serve as a nomenclatural type, when the holotype is damaged/lost, is called
- A) Epitype
  - B) Paratype
  - C) Syntype
  - D) Lectotype
48. In which of the following trophic levels of a forest ecosystem, the biomass is the highest?
- A) First
  - B) Second
  - C) Third
  - D) Decomposer level

49. When an inhibitor is binding to an enzyme-substrate complex and is not competing with the substrate, its addition to the reaction mixture will result in
- A) No change in  $V_{max}$  but increase in  $K_m$
  - B) Decreased  $V_{max}$  but no change in  $K_m$
  - C) Decreased  $V_{max}$  and decreased  $K_m$
  - D) Decreased  $V_{max}$  and increased  $K_m$
50. Glucosamine, glucuronic acid and gluconic acid are
- A) Natural pentoses
  - B) Oligosaccharides
  - C) Derived monosaccharides
  - D) Derived disaccharides
51. Soil formation is initiated by the process of
- A) Laterization
  - B) Crushing of rocks
  - C) Volcanic eruption
  - D) Weathering
52. The meristematic zone of a root tip does not play any role in water absorption because
- A) It has loosely arranged cells
  - B) It has no root hairs
  - C) It has no chloroplasts in its cells
  - D) It has tightly packed cells
53. The phenotypes in the offspring from a cross between parents with allelic constitution  $AaBbccDDEe \times AaBbCcDdEE$  will be
- A) 8
  - B) 16
  - C) 32
  - D) 4
54. If transversion occurs in the 4<sup>th</sup> and 5<sup>th</sup> nucleotides of a DNA segment reading ATGCTCGA, the recombinant sequence will be
- A) ATGTCCGA
  - B) ATGGACGA
  - C) ATGAGGGA
  - D) ATGCAGGA
55. Liposome encapsulation is a technique for
- A) Gene isolation
  - B) Gene transfer
  - C) Gene amplification
  - D) DNA characterization
56. A bacterial chromosome contains 100 kbp DNA and six restriction sites. A 10 bp foreign DNA is introduced into the DNA. After complete restriction digestion and gel electrophoresis the fragments would be ~34kbp, ~23kbp, ~22kbp, 11kbp, 8kbp and
- A) 2kbp

- B) 8kbp + 4kbp  
C) 12kbp  
D) 7kbp + 5 kbp
57. Transduction is a mode of genetic recombination in  
A) Bacteria and green algae  
B) Bacteria and cyanobacteria  
C) Bacteria and fungi  
D) Cyanobacteria and green algae
58. The amphithecial zone of a developing sporophyte of *Marchantia* forms the  
A) Calyptra  
B) Jacket layers  
C) Sporogenous tissues  
D) Columella
59. Which of the following groups of algae is generally involved as photobiont in the formation of most of the lichen thalli as symbiotic association?  
A) Cyanobacteria  
B) Green algae  
C) Brown algae  
D) Diatoms
60. The synergids of an embryo sac are connected to the  
A) Ovary wall  
B) Egg cell  
C) Micropyle  
D) Funiculus
61. The sub-classes-Polypetalae, Gamopetalae and Monoclamydae-have been proposed in the classification system of  
A) Bentham and Hooker  
B) Hutchinson  
C) APG  
D) Engler and Prantl
62. The amino acid that acts as a precursor of proline, ornithin and arginine is  
A) Alanine  
B) Glutamine  
C) Glutamate  
D) Serine
63. Which of the following is not a functional group in biomolecules?  
A)  $-\text{CH}_3$   
B)  $\text{C}\equiv\text{C}$   
C)  $\text{C}=\text{C}$   
D)  $\text{C}=\text{O}$
64. The addition or deletion of one base in a gene results in  
A) Silent mutation  
B) Frame shift mutation  
C) Mis-sense mutation



D) Translocation

65. Saffron is the dried

A) Petals of *Crocus sativus* flower

B) Entire flower of *Crocus sativus*

C) Stamens of *Crocus sativus* flower

D) Stigmas and top of the styles of *Crocus sativus* flower

66. Apical dominance is caused when

A) Auxin concentration is more than cytokinin

B) Auxin concentration is about one third of cytokinin

C) Auxin concentration is about half of cytokinin

D) Auxin and cytokinin are in equal concentration

67. A cell was measured as 300  $\mu\text{m}$  in diameter under microscope with 10x objective and 10x eye piece. The actual diameter of the cell was

A) 1.5  $\mu\text{m}$

B) 3  $\mu\text{m}$

C) 30  $\mu\text{m}$

D) 15  $\mu\text{m}$

68. The mitochondrial cristae are the site of

A) Breakdown of pyruvate to acetyl CoA

B) Protein synthesis

C) Phosphorylation of flavoproteins

D) Oxidation-reduction reactions

69. Which of the following chemicals is used for transfection?

A) Calcium phosphate

B) Calcium hydroxide

C) Calcium chloride

D) Sodium hydroxide

70. The nuclear spindles consists of fibres of

A) One type

B) Two types

C) Three types

D) Four types