

PRESIDENCY COLLEGE
KOLKATA
Admission Test - 2007
Botany (Honours)

Time: 2 Hours

Full Marks: 100

A. Put tick (✓) mark on correct answer in the following questions -

1 x 60 = 60

- Which one is the smallest cell?
 - Virus;
 - Pleuropneumonia*;
 - Acetabularia*;
 - Spirulina*.
- The monomers in proteins are called
 - amines;
 - peptides;
 - polypeptides;
 - amino acids.
- Disaccharides are composed of two
 - starch molecules;
 - cellulose molecules;
 - monosaccharides;
 - peptides.
- The plasma membrane is
 - impermeable;
 - totally permeable;
 - selectively permeable;
 - all of the above.
- rRNA is produced in the
 - ribosomes;
 - nucleoli;
 - chromosomes;
 - ribosomes and chromosomes.
- The vitamin precursor of the coenzyme NAD is
 - thiamine;
 - niacin;
 - adenine;
 - lysine.
- In polytene chromosomes the active genes are located in
 - bands;
 - interbands;
 - chromocentre;
 - only in X chromosome.
- Resolution of unaided human eye is
 - 75 μm ;
 - 100 μm ;
 - 150 μm ;
 - 200 μm .
- A cell is reduced in size when placed in sugar solution which is
 - hypotonic;
 - hypertonic;
 - isotonic;
 - mesotonic.
- Enzymes speed up biochemical reactions by
 - increasing the activation energy of the reaction;
 - lowering the temperature of the reaction;
 - increasing the temperature of the reaction;
 - lowering the activation energy of the reaction.
- TCA cycle operates in -
 - cytosol;
 - lysosome;
 - mitochondrion;
 - nucleus.
- Mendel could not observe crossing over and linkage because
 - he observed only pure trait.
 - he considered only contrasting traits;
 - traits were present either on different chromosomes or were far apart within a chromosome;
 - both a and c.
- How many gametes can be formed from AaBbCc?
 - 8;
 - 16;
 - 4;
 - 20.

14. Two DNA strands are
- a) complementary;
 - b) antiparallel and complementary;
 - c) antiparallel and noncomplementary;
 - d) none of the above.
15. In 80s ribosome "s" refers to
- a) sedimentation rate;
 - b) Svedberg's unit;
 - c) synthesis rate;
 - d) Both a and b.
16. Crossing over and chiasma formation occur during
- a) leptotene;
 - b) zygotene;
 - c) pachytene;
 - d) diplotene.
17. Doubling of the mass of DNA can be seen in the cell cycle at
- a) metaphase;
 - b) S phase;
 - c) G₂ phase;
 - d) G₁ phase.
18. How many chromosomes are found in a typical bacterial cell?
- a) 2;
 - b) 1;
 - c) 4;
 - d) 23.
19. Which of the following plant pigment is not water soluble?
- a) chlorophyll;
 - b) carotene;
 - c) xanthophyll;
 - d) anthocyanin.
20. Binomial species names are always
- a) Italicized;
 - b) underlined;
 - c) Italicized and underlined;
 - d) Italicized or underlined.
21. Which one of the following is not a green house gas?
- a) CO₂
 - b) CH₄
 - c) O₂
 - d) CFC
22. Teichoic acid is present in
- a) cell walls of plants;
 - b) cell walls of Gram-positive bacteria;
 - c) cell walls of protozoa;
 - d) cell walls of fungi.
23. Retroviruses are
- a) DNA virus;
 - b) RNA virus but can convert their RNA to DNA;
 - c) RNA virus but cannot convert their RNA to DNA;
 - d) None of the above.
24. Who is considered the father of plant tissue culture?
- a) Mendel;
 - b) Haberlandt;
 - c) Morgan;
 - d) Murashige.
25. Pteridophytes do not have
- a) vessels;
 - b) sieve cells;
 - c) companion cells;
 - d) phloem fibre.
26. Aerenchyma occurs in
- a) mesophytes;
 - b) xerophytes;
 - c) hydrophytes;
 - d) sciophytes.
27. In a compound microscope, real image is produced by
- a) ocular;
 - b) condenser;
 - c) objectives;
 - d) eye-piece.
28. In photosynthesis
- a) both CO₂ and O₂ are reduced;
 - b) both CO₂ and O₂ are oxidized;
 - c) CO₂ is reduced and H₂O is oxidized;
 - d) both CO₂ and H₂O are reduced.

29. Which one is produced as a result of double fertilization?
- seed;
 - fruit;
 - megaspore;
 - endosperm.
30. Hypanthodium inflorescence is found in
- Banyan;
 - Fig;
 - Peepal;
 - all three.
31. Which of the following is a saprophyte?
- Utricularia*;
 - Nepenthes*;
 - Monotropa*;
 - Loranthus*.
32. Parthenocarpic fruits can be produced by
- IAA;
 - NAA;
 - IBA;
 - All these.
33. In respiration of 180 g glucose which of the following is formed?
- 390 g CO_2 + 108 g H_2O + 686 kcal;
 - 390 g CO_2 + 108 g H_2O + 391 kcal;
 - 264 g CO_2 + 108 g H_2O + 686 kcal;
 - 264 g CO_2 + 108 g H_2O + 386 kcal.
34. One of the important Basidiomycetous yeast is
- Saccharomyces*;
 - Candida*;
 - Cryptococcus*;
 - Torulopsis*.
35. A parasitic mushroom is
- Agaricus campestris*;
 - Volvariella volvacea*;
 - Armillaria mellea*;
 - Pleurotus sajor-caju*.
36. Which of the following is the CO_2 acceptor in C_4 plants?
- RuBP;
 - PEP;
 - Pyruvic acid;
 - None of the above.
37. Plant body disorders due to harmful physiological changes are known as
- infection;
 - symptoms;
 - disease;
 - pathology.
38. Which is true for FAD?
- FAD is a protein part of an enzyme;
 - FAD is an enzyme;
 - FAD is the organic ion of an enzyme;
 - FAD is a co-enzyme.
39. The first group of organisms which appeared in the primitive earth were anaerobic, because
- molecular oxygen was absent;
 - organisms were unable to utilize O_2 ;
 - absence of appropriate raw materials;
 - nothing is known clearly.
40. A cell has been placed in 0.4 M solution of salt but no change in the cell volume is observed. The concentration of the cell sap should be
- 1.0 M;
 - 0.4 M;
 - 0.004 M;
 - 4.0 M.
41. Cyclic photophosphorylation produces
- NADPH;
 - ATP & NADPH;
 - NADPH & O_2 ;
 - ATP only.
42. Why are bacteria considered as prokaryotes?
- always unicellular;
 - presence of circular ds DNA;
 - absence of sex organ;
 - absence of true nucleus.
43. Another name of a complete virus is
- virion;
 - viroid;
 - prion;
 - capsid.
44. The molecular weight of a substrate is always less than the molecular weight of
- a product;
 - an enzyme;
 - a coenzyme;
 - a cofactor.

6) Name the different types of histone found in eukaryotic chromosome.

7) What is minamata disease?

8) Distinguish between Leading strand and Lagging strand during DNA replication.

9) What is Red Data book and what is Green Data book?

10) Distinguish between morphological nature of chloroplasts in C_3 & C_4 plants.

11) Point out the sub-cellular locales of Glycolysis and Krebs cycle in an eukaryotic cell.

12) Name the pigment found in root nodules at the time of nitrogen fixation. Name two genes involved in nitrogen fixation?

13) What is protoplast? What happens if a protoplast is placed in water? .

14) What is transgene?

15) Name the edible parts of Pomegranate (bedana) and Coconut (narkel).

16) Define antibiotics. Cite one example.

17) Differentiate between holoenzyme and apoenzyme.

18) What is meant by clone and cloning?

19) In floral formula what is the meaning of \oplus , %, Co, Ca?

20. What is 'Bt cotton'? Name the microorganism involved in it.

RESULTS		
Q.A (60)	Q.B (40)	TOTAL (100)