



Sample Paper-04

Dropper NEET (2024)

**BOTANY**

**ANSWER KEY**

1. (1)
2. (1)
3. (4)
4. (3)
5. (1)
6. (2)
7. (3)
8. (2)
9. (4)
10. (4)
11. (2)
12. (1)
13. (1)
14. (3)
15. (1)
16. (3)
17. (3)
18. (4)
19. (2)
20. (1)
21. (4)
22. (1)
23. (1)
24. (4)
25. (2)

26. (1)
27. (2)
28. (2)
29. (1)
30. (2)
31. (4)
32. (3)
33. (1)
34. (1)
35. (4)
36. (2)
37. (3)
38. (4)
39. (2)
40. (3)
41. (3)
42. (2)
43. (4)
44. (2)
45. (2)
46. (1)
47. (3)
48. (2)
49. (1)
50. (2)



## HINTS AND SOLUTION

1. (1)  
Thalassemia, Sickle-cell anaemia, Phenylketonuria and cystic fibrosis are autosomal recessive disease.
2. (1)  
Funicle- stalk of seed, scar of ovule- hilum, Zygote- embryo, Inner integument- tegmen
3. (4)  
Whisky and rum are produced by distillation, but wine and beer are produced without distillation of fermented broth.
4. (3)  
Catalytic RNA is ribozyme.
5. (1)  
Both apical and intercalary meristem are primary meristems. They appear early in life of plant and contribute to the formation of primary plant body. Lateral meristem are secondary.
6. (2)  
Ethylene is a gaseous hormone which acts as growth regulator in plants. It is the most simple plant hormone whose primary function is fruit ripening and senescence.
7. (3)  
In a cross  $AaBb \times AaBb$ , proportion of offspring would have same phenotype as the parents is  $4/16$ .
8. (2)  
In *Zostera* (sea grasses) female flower remain submerged in water and pollen grains are released inside the water. In *Vallisneria* female flower float on the water surface and male flower mate with female on the water surface.
9. (4)  
Glycolysis takes place in cytoplasm and oxidative phosphorylation takes place in mitochondrial membrane.
10. (4)  
A-*Hibiscus*, B-*Papaver*, C-*Michelia*
11. (2)  
Energy is partially utilized from one trophic level to another.
12. (1)  
Photorespiration is a wasteful process. There is no synthesis of sugars, ATP or NADPH, instead ATP is utilized and  $CO_2$  is released in photorespiration.
13. (1)  
*Cuscuta*, a parasitic plant that is commonly found growing on hedge plants, has lost its chlorophyll and leaves in course of evolution. Female mosquito is not considered as a parasite, although it needs our blood for reproduction.
14. (3)  
Kingdom- plantae ; Division- Angiospermae ; Class- Dicotyledonae ; Order- Sapindales ; Family- Anacardiaceae ; Genus- *Mangifera* ; Species- *indica*
15. (1)  
Crysophyte- Diatoms; *Gonyaulax*- Dinoflagellate ; *Agaricus*- Fungus ; *Paramoecium*- Protozoa
16. (3)  
In eukaryotes, when the RNA polymerase reaches the terminator region, the hnRNA and protein are released due to the presence of rho factor.
17. (3)  
In vacuole the concentration of ions and other material will be more than the cytoplasm. Tonoplast facilitates the transport of ions and other material against concentration to the vacuole.
18. (4)  
Purpose of mitosis is growth repair and replacement of cell while meiosis is for the production of gametes.
19. (2)  
Synapsis aligns homologous chromosomes- Zygotene ; Synthesis of RNA and protein-  $G_2$  phase ; Action of enzyme recombinase- Pachytene ; Centromeres do not separate but chromatids move towards opposite poles- Anaphase I



20. (1)  
XO type of sex determination is found in large number of insects. In such insects, some of the sperms bear the X-chromosome whereas some do not.
21. (4)  
If two plants are in the same 'order' but not in the same genus, they will belong to the same Kingdom, division and class but may belong to the different family, genus or species.
22. (1)
- |                         |                 |
|-------------------------|-----------------|
| <i>Cuscuta</i>          | Angiosperm      |
| <i>Trypanosoma</i>      | Protozoa        |
| <i>Penicillium</i>      | Ascomycetes     |
| <i>Methanobacterium</i> | Archaeobacteria |
23. (1)  
Nucellus present in the ovules (female gametophyte) of angiosperms involves in formation of archesporium and supplying nourishment for embryo sac
24. (4)  
1- *Fucus* 2- *Spirogyra* 3- *Dictyota* 4- *Porphyra*.  
Carragenans are produced by red algae which is *Porphyra*
25. (2)  
 $\% \text{ } \frac{K_{(5)} C_{1+2+(2)} A_{(9)+1} + G_1}{\text{Pea}}$  belongs to Fabaceae family.
26. (1)  
The height in humans is under the control of polygenic inheritance. The human having genotype aabbcc has 120 cm of the height and that of AABBCC is 240 cm. The height of a person having the genotype AaBbCc should be 180 cm.
27. (2)  
Length of DNA with 25 base pairs is 85 Å.
28. (2)  
The mesophyll is not well differentiated into palisade and spongy parenchyma.
29. (1)  
High degree of endemism and high level of species richness is observed in biodiversity hotspot.
30. (2)  
Tonoplast facilitates the transport of several ions and other materials against the concentration gradient into the vacuole.
31. (4)  
Formation of the synaptonemal complex, recombination, separation of homologous chromosomes, separation of sister chromatids.
32. (3)  
When resources are limited the competitively superior species will eventually eliminate the other species. The evidence for such competitive exclusion occurring in nature is always exclusive.
33. (1)  
The genes whose alteration cause phenylketonuria present on Chromosome 12 which is an autosome not a sex chromosome therefore no change in sex chromosome.
34. (1)  
The evolution of the C<sub>4</sub> photosynthetic system is probably one of the strategies for maximizing the availability of CO<sub>2</sub> while minimizing water loss because they already have scarcity of water in desert. A C<sub>4</sub> plant loses only half as much water as a C<sub>3</sub> plant for the same amount of CO<sub>2</sub> fixed.
35. (4)  
Sparrow can occupy two different trophic levels in these two food chains.
36. (2)  
DNA dependent DNA polymerase does not initiate replication because the RNA primer first attach to the unwind DNA strand then polymerase polymerises the chain.
37. (3)  
*Propionibacterium sharmanii* is commercially used in the production of swiss cheese.



38. (4)  
2-phosphoglycerate → PEP + Water
39. (2)  
pollen grain has two layered prominent wall. Hard outer layered prominent wall. Exine is composed of sporopollenin. Sporopollenin forms discontinuous exine.
40. (3)  
Exponential growth cannot be sustained for much time due to limited space and nutrient and accumulation of toxic agent.
41. (3)  
Carotenoids in chloroplast help in protecting chlorophyll molecules from photooxidation.
42. (2)  
Cyanobacteria and plants have both PSI and PS II while photosynthetic bacteria have PSI
43. (4)  
Z scheme of light reaction takes place in presence of both PSI and PSII Cyclic photophosphorylation results into only the synthesis of ATP not NADPH<sub>2</sub>.
44. (2)  
Cytochrome is essential for the respiration as well as photosynthesis.
45. (2)  
6 molecules of CO<sub>2</sub> and 12 molecules of NADPH<sup>+</sup> + H<sup>+</sup> and 18 ATP are used to form one hexose molecule. Light reaction results in formation of ATP and NADPH<sub>2</sub>.
46. (1)  
Photorespiration occurs because oxygen rather than carbon dioxide links to the rubisco enzyme in the Calvin cycle.
47. (3)  
Microsporogenesis is a process of production of male gametophyte pollen grains inside the anther
48. (2)  
Cleistogamous flower never bloom to ensure pollination therefore seed formation takes place. Ex. *Commelina*.
49. (1)  
Movement of pollen grain towards the stigma and growth of pollen tube toward ovule is chemotactic movement.
50. (2)  
If a bacterial cell divides once every minute and takes 23 minutes to fill a bottle. The time it will take to fill half the bottle is 22 minutes.

