



Sample Paper-04

DROPPER NEET (2024)

BOTANY

SECTION-A

1. Following are the names of the some Mendelian disorders.

Colour blindness, Thalassemia, Sickle-cell anaemia, Phenylketonuria, Haemophilia, Cystic fibrosis.

Choose the **correct** number of autosomal recessive disorders;

- (1) 4
- (2) 3
- (3) 5
- (4) 2

2. Match **List-I** with **List-II** to find out the **correct** option.

List I (Structure before fertilisation)		List II (Structure after fertilisation)	
(A)	Funiculus	(I)	Hilum
(B)	Scar of ovule	(II)	Tegmen
(C)	Zygote	(III)	Embryo
(D)	Inner integument	(IV)	Stalk of seed
		(V)	Testa

- (1) (A) – (IV), (B) – (I), (C) – (III), (D) – (II)
- (2) (A) – (III), (B) – (I), (C) – (II), (D) – (V)
- (3) (A) – (V), (B) – (I), (C) – (II), (D) – (IV)
- (4) (A) – (IV), (B) – (III), (C) – (II), (D) – (I)

3. Identify the **true** statements and choose the **correct** option.

- A. Whisky and rum are produced without distillation, but wine and beer are produced by distillation of fermented broth.
- B. Adenovirus causes respiratory infection.
- C. Large holes in 'Swiss cheese' are due to production of a large amount of CO₂ by a bacterium named *Propionibacterium sharmanii*.
- D. An antibiotic obtained from *Penicillium notatum* was used to treat American soldiers wounded in World War II.

- (1) A and B only
- (2) B and D only
- (3) A, B, C, D
- (4) B, C, D only

4. Select the **incorrect** match.

- (1) Capping in hnRNA - Post transcriptional modification
- (2) Adapter molecule - tRNA
- (3) Catalytic RNA - mRNA
- (4) RNA polymerase III - synthesises 5S rRNA

5. **Assertion (A):** Both apical and intercalary meristem are primary meristems.

Reason (R): They appear early in life of plant and contribute to the formation of primary plant body.

- (1) Both **Assertion (A)** and **Reason (R)** are true, and **Reason (R)** is a correct explanation of **Assertion (A)**.
- (2) Both **Assertion (A)** and **Reason (R)** are true, but **Reason (R)** is not a correct explanation of **Assertion (A)**.
- (3) **Assertion (A)** is true, and **Reason (R)** is false.
- (4) **Assertion (A)** is false, and **Reason (R)** is true.

6. **Assertion (A):** Ethylene is a gaseous hormone which acts as growth regulator in plants.

Reason (R): It is the most simple plant hormone.

- (1) Both **Assertion (A)** and **Reason (R)** are true, and **Reason (R)** is a correct explanation of **Assertion (A)**.
- (2) Both **Assertion (A)** and **Reason (R)** are true, but **Reason (R)** is not a correct explanation of **Assertion (A)**.
- (3) **Assertion (A)** is true, and **Reason (R)** is false.
- (4) **Assertion (A)** is false, and **Reason (R)** is true.

7. In a cross AaBb × AaBb, what proportion of offspring would have same phenotype as the parents?

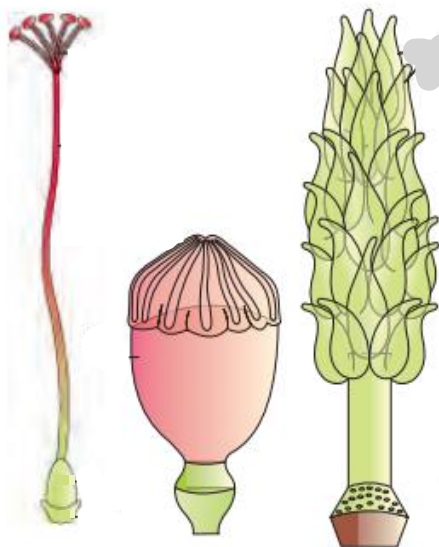
- (1) 3/4
- (2) 3/16
- (3) 4/16
- (4) 1/16



8. Which of the following statements is **incorrect**?
- (1) Exine of pollen grains exhibits a fascinating array of patterns and designs.
 - (2) Female flowers remain submerged in water and pollen grains are released inside water in *Vallisneria*.
 - (3) Chasmogamous as well as cleistogamous both type of flowers are found in *Commelina*.
 - (4) The failure of pollen grains from fertilising the self-ovule is termed as self-incompatibility.

9. Which of the following stages of aerobic respiration takes place in the matrix of the mitochondria?
- (I) Oxidative decarboxylation of pyruvic acid
 - (II) Glycolysis
 - (III) Krebs cycle
 - (IV) Oxidative phosphorylation
- (1) I and II only
 - (2) II and III only
 - (3) III and IV only
 - (4) I and III only

10. Identify the plants of the parts in given diagrams A, B, C and choose the **correct** option:



A B C

- (1) A-*Hibiscus*, B-*Michelia*, C-*Papaver*
 - (2) A-*Papaver*, B-*Michelia*, C-*Hibiscus*
 - (3) A-*Oxalis*, B-*Commelina*, C-*Vinca*
 - (4) A-*Hibiscus*, B-*Papaver*, C-*Michelia*
11. Which of the following statements is **false**?
- (1) Food chains are inter-connected in an ecosystem.
 - (2) Energy is completely utilized from one trophic level to another.
 - (3) The rate of formation of new organic matter by consumers is defined as secondary productivity.
 - (4) The annual net primary productivity of the whole biosphere is approximately 170 billion tons of organic matter.

12. Choose the **correct** option for the following statements:

Statement I: Photorespiration is a wasteful process.

Statement II: There is no synthesis of sugars, ATP or NADPH, instead ATP is utilized and CO₂ is released in photorespiration.

- (1) Statement I and Statement II both are correct.
- (2) Statement I is correct, but Statement II is incorrect.
- (3) Statement I is incorrect, but Statement II is correct.
- (4) Statement I and Statement II both are incorrect.

13. Choose the **correct** option for the following statements:

Statement I: *Cuscuta*, a parasitic plant that is commonly found growing on hedge plants, has lost its chlorophyll and leaves in course of evolution.

Statement II: Female mosquito is not considered as a parasite, although it needs our blood for reproduction.

- (1) Statement I and Statement II both are correct.
- (2) Statement I is correct, but Statement II is incorrect.
- (3) Statement I is incorrect, but Statement II is correct.
- (4) Statement I and Statement II both are incorrect.

14. Identify the **correct** sequence of taxonomic hierarchical arrangement in ascending order:

- (1) Sapindales, Dicotyledonae, Anacardiaceae, *Mangifera*
- (2) *Mangifera*, Dicotyledonae, Anacardiaceae, Sapindales
- (3) *Mangifera*, Anacardiaceae, Sapindales, Dicotyledonae
- (4) Dicotyledonae, Anacardiaceae, Sapindales, *Mangifera*

15. Match **List-I** with **List-II** to find out the **correct** option.

List-I		List-II	
(A)	Chrysophyta	(I)	Fungus
(B)	<i>Gonyaulax</i>	(II)	Diatom
(C)	<i>Agaricus</i>	(III)	Protozoan
(D)	<i>Paramoecium</i>	(IV)	Dinoflagellate

- (1) (A) – (II), (B) – (IV), (C) – (I), (D) – (III)
- (2) (A) – (III), (B) – (I), (C) – (II), (D) – (IV)
- (3) (A) – (I), (B) – (III), (C) – (II), (D) – (IV)
- (4) (A) – (IV), (B) – (III), (C) – (II), (D) – (I)



16. In eukaryotes, when the RNA polymerase reaches the terminator region, the hnRNA and protein are released due to the presence of;

- (1) sigma factor. (2) gamma factor.
(3) rho factor. (4) DNA polymerase.

17. Choose the **correct** option for the following statements:

Statement I: In vacuole the concentration of ions and other material will be less than the cytoplasm.

Statement II: Tonoplast facilitates the transport of ions and other material against concentration to the vacuole.

- (1) Statement I and Statement II both are correct.
(2) Statement I is correct, but Statement II is incorrect.
(3) Statement I is incorrect, but Statement II is correct.
(4) Statement I and Statement II both are incorrect.

18. Which of the following differences between mitosis and meiosis is **incorrect**?

	Feature	Mitosis	Meiosis
(1)	Cell type	Mostly in somatic cells	Mostly in germ cells
(2)	Number of daughter cells	2	4
(3)	Chromosome number in daughter cells	Diploid (2n)	Haploid (n)
(4)	Purpose	Production of gametes	Growth repair and replacement of cells

19. Match **List-I** with **List-II** to find out the **correct** option.

List I		List II	
(A)	Synapsis aligns homologous chromosomes	(I)	Pachytene
(B)	Synthesis of RNA and protein	(II)	Zygotene
(C)	Action of enzyme recombinase	(III)	G ₂ -phase
(D)	Centromeres do not separate but chromatids move towards opposite poles	(IV)	Anaphase-I
		(V)	Anaphase-II

- (1) (A) – (II), (B) – (IV), (C) – (I), (D) – (V)
(2) (A) – (II), (B) – (III), (C) – (I), (D) – (IV)
(3) (A) – (I), (B) – (V), (C) – (II), (D) – (IV)
(4) (A) – (IV), (B) – (III), (C) – (II), (D) – (I)

20. **Assertion (A):** XO type of sex determination is found in large number of insects.

Reason (R): In such insects, some of the sperms bear the X-chromosome whereas some do not.

- (1) Both **Assertion (A)** and **Reason (R)** are true, and **Reason (R)** is a correct explanation of **Assertion (A)**.
(2) Both **Assertion (A)** and **Reason (R)** are true, but **Reason (R)** is not a correct explanation of **Assertion (A)**.
(3) **Assertion (A)** is true, and **Reason (R)** is false.
(4) **Assertion (A)** is false, and **Reason (R)** is true.

21. If two plants are in the same 'order' but not in the same genus, they will belong to the following same taxonomical categories, **except**

- (1) Class (2) Division
(3) Kingdom (4) Species

22. Match **List-I** with **List-II** to find out the **correct** option.

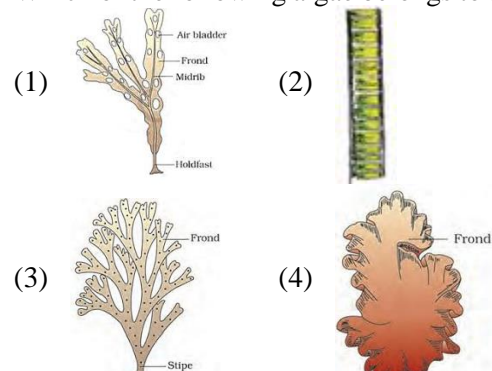
List-I		List-II	
(A)	<i>Cuscuta</i>	(I)	Protozoa
(B)	<i>Trypanosoma</i>	(II)	Archaeobacteria
(C)	<i>Penicillium</i>	(III)	Ascomycetes
(D)	<i>Methanobacterium</i>	(IV)	Angiospermae

- (1) (A) – (IV), (B) – (I), (C) – (III), (D) – (II)
(2) (A) – (II), (B) – (IV), (C) – (III), (D) – (I)
(3) (A) – (II), (B) – (III), (C) – (IV), (D) – (I)
(4) (A) – (III), (B) – (IV), (C) – (I), (D) – (II)

23. Nucellus present in the ovules of angiosperms involves in:

- (I) formation of archesporium.
(II) supplying nourishment for embryo sac development.
(III) supplying nourishment for development of male gametophyte.
(IV) supplying nourishment for development of pollen grain.
(1) Only I and II (2) Only I, II and III
(3) Only II, III, IV (4) I, II, III and IV

24. Members of a particular class of algae produce a commercially used hydrocolloid called carrageen. Which of the following algae belongs to that class?





25. Floral formula of pea is:
- (1) $\oplus \text{♀} K_{2+2} C_4 A_{2+4} \underline{+G}_{(2)}$
 - (2) $\% \text{♀} K_{(5)} C_{1+2+(2)} A_{(9)+1} \underline{+G}_1$
 - (3) $\oplus \text{♀} P_{(5)} \widehat{C_{(5)} A_5 G_{(2)}}$
 - (4) $\text{Br} \oplus \text{♀} P_{(3+3)} \widehat{A_{3+3} G_{(3)}}$
26. 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. What can be the height of a person having the genotype AaBbCc?
- (1) 180 cm
 - (2) 120 cm
 - (3) 360 cm
 - (4) 240 cm
27. Length of DNA with 25 base pairs is:
- (1) 81.6 Å
 - (2) 85 Å
 - (3) 88.4 Å
 - (4) 82.2 Å
28. Identify the **incorrect** statement from the following w.r.t the anatomy of isobilateral leaf.
- (1) Stomata are present on both the surfaces of the epidermis.
 - (2) The mesophyll is well differentiated into palisade and spongy parenchyma.
 - (3) In grasses, certain adaxial epidermal cells along the veins modify themselves into large, empty, colorless cells called bulliform cells.
 - (4) The parallel venation in monocot leaves is reflected in the near similar sizes of vascular bundles, except in main veins.
29. High degree of endemism and high level of species richness is observed in:
- (1) Biodiversity hot spots
 - (2) National parks
 - (3) Wildlife sanctuaries
 - (4) Biosphere reserves
30. Identify the **incorrect** statement about the selective permeability of a cell membrane.
- (1) The polar molecules cannot pass through the nonpolar lipid bilayer by simple diffusion.
 - (2) Tonoplast facilitates the transport of several ions and other materials along the concentration gradient into the vacuole.
 - (3) Na^+/K^+ pump facilitates movement of ions against the concentration gradients.
 - (4) Neutral solutes may move across the membrane by the process of simple diffusion.
31. Which one of the following contains the **correct** order of meiotic events?
- (1) Separation of sister chromatids, recombination, formation of the synaptonemal complex, separation of homologous chromosomes.
 - (2) Separation of homologous chromosomes, formation of the synaptonemal complex, recombination, separation of sister chromatids.
 - (3) Formation of synaptonemal complex, recombination, separation of sister chromatids, separation of homologous chromosomes.
 - (4) Formation of the synaptonemal complex, recombination, separation of homologous chromosomes, separation of sister chromatids.
32. **Assertion (A):** When resources are limited the competitively superior species will eventually eliminate the other species.
Reason (R): The evidence for such competitive exclusion occurring in nature is always conclusive.
- (1) Both **Assertion (A)** and **Reason (R)** are true, and **Reason (R)** is a correct explanation of **Assertion (A)**.
 - (2) Both **Assertion (A)** and **Reason (R)** are true, but **Reason (R)** is not a correct explanation of **Assertion (A)**.
 - (3) **Assertion (A)** is true, and **Reason (R)** is false.
 - (4) **Assertion (A)** is false, and **Reason (R)** is true.
33. A female suffering from phenylketonuria (allele represented by 'p') will have the sex chromosomes as:
- (1) XX
 - (2) $\text{X}^{\text{p}}\text{X}$
 - (3) $\text{X}^{\text{p}}\text{X}^{\text{p}}$
 - (4) $\text{X}^{\text{p}}\text{O}$
34. **Statement I:** The evolution of the C_4 photosynthetic system is probably one of the strategies for maximizing the availability of CO_2 while minimizing water loss.
Statement II: A C_4 plant loses only half as much water as a C_3 plant for the same amount of CO_2 fixed.
- (1) Both Statement I and Statement II are correct.
 - (2) Statement I is correct and Statement II is incorrect.
 - (3) Statement I is incorrect and Statement II is correct.
 - (4) Both Statement I and Statement II are incorrect.



35. Observe the following two food chains A and B.
A: grass→worm→sparrow→snake→peacock
B: seeds→sparrow→dog→jackal→lion
Choose the **incorrect** statement for them.
- (1) Sparrow of A and jackal of B lie at same trophic level.
 - (2) In A, peacock has received the lowest amount of energy.
 - (3) In B, lion is the top carnivore.
 - (4) Sparrow cannot occupy two different trophic levels in these two food chains.

SECTION-B

36. Which of the following is not a function of DNA-dependent DNA polymerase enzyme?
- (1) Using a DNA template to catalyse the polymerisation of deoxynucleotides.
 - (2) Initiate the process of replication.
 - (3) Elongate the daughter strand during replication.
 - (4) Synthesis of discontinuous DNA fragments.
37. **Statement I:** Citric acid is commercially obtained from *Propionibacterium sharmanii*.
Statement II: *Sachharomyces* is utilised for commercial production of ethyl alcohol.
- (1) Both Statement I and Statement II are correct.
 - (2) Statement I is correct and Statement II is incorrect.
 - (3) Statement I is incorrect and Statement II is correct.
 - (4) Both Statement I and Statement II are incorrect.
38. In which of the following reactions of glycolysis, a molecule of water is removed from the substrate?
- (1) Fructose-6-phosphate → Fructose 1, 6-bisphosphate
 - (2) 3-phosphoglyceraldehyde → 1,3-bisphosphoglyceric acid
 - (3) PEP → Pyruvic acid
 - (4) 2-phosphoglycerate → PEP

39. Identify the true statements and choose the **correct** option about pollen grain.
- (i) It has two layered prominent wall.
 - (ii) Hard outer layered prominent wall.
 - (iii) Exine is composed of sporopollenin.
 - (iv) Sporopollenin forms continuous exine.
- (1) i, ii, iii, iv
 - (2) i, ii, iii only
 - (3) i, iii only
 - (4) i & iv only
40. Exponential growth cannot be sustained for much time due to:
- (i) limited space and nutrient.
 - (ii) accumulation of toxic agent.
 - (iii) unlimited space and nutrient.
 - (iv) accumulation of nutrient agent.
- (1) (i) and (iii)
 - (2) (iii) and (iv)
 - (3) (i) and (ii)
 - (4) (iv) and (ii)
41. Presence of carotenes in chloroplast helps in:
- (1) ATP synthesis
 - (2) Conversion of radiant energy into chemical energy
 - (3) Protecting chlorophyll molecules from photooxidation
 - (4) Absorption of longer wavelength of light
42. Which of the following photosynthetic bacteria have both PS-I & PS-II?
- (1) Purple sulphur bacteria
 - (2) Cyanobacteria
 - (3) Purple non sulphur bacteria
 - (4) Green sulphur bacteria
43. Read the following four statements, A, B, C and D and select the right option having both correct statements.
- Statements:**
- (A) Z scheme of light reaction takes place in presence of PSI only.
 - (B) Only PSI is functional in cyclic photophosphorylation
 - (C) Cyclic photophosphorylation results into synthesis of ATP and NADPH(H⁺)
 - (D) Stroma lamellae lack PSII as well as NADP reductase
- Options:**
- (1) A and B
 - (2) B and C
 - (3) C and D
 - (4) B and D



44. Which one of the following is essential for the respiration as well as photosynthesis?
- (1) Ubiquinone
 - (2) Cytochrome
 - (3) RuBisCO
 - (4) Plastocyanin
45. **Assertion (A):** 6 molecules of CO_2 and 12 molecules of $\text{NADPH}^+ + \text{H}^+$ and 18 ATP are used to form one hexose molecule.
Reason (R): Light reaction results in formation of ATP and NADPH_2 .
- (1) Both **Assertion (A)** and **Reason (R)** are true, and **Reason (R)** is a correct explanation of **Assertion (A)**.
 - (2) Both **Assertion (A)** and **Reason (R)** are true, but **Reason (R)** is not a correct explanation of **Assertion (A)**.
 - (3) **Assertion (A)** is true, and **Reason (R)** is false.
 - (4) **Assertion (A)** is false, and **Reason (R)** is true.
46. Photorespiration
- (1) Occurs because oxygen rather than carbon dioxide links to the rubisco enzyme in the Calvin cycle.
 - (2) Occurs more in C_4 than in C_3 plants under identical conditions.
 - (3) Describes the uptake of CO_2 & the release of oxygen in chloroplasts.
 - (4) All of the above
47. Microsporogenesis occurs
- (1) On margins of leaves.
 - (2) Inside the ovule.
 - (3) Inside the anther.
 - (4) In essential floral organs.
48. Cleistogamous flowers are
- (1) Wind pollinated
 - (2) Self-pollinated
 - (3) Cross-pollinated
 - (4) Insect pollinated
49. Which of the following statement is correct for the pollen tube?
- (1) It shows chemotactic movement.
 - (2) It shows only tip growth.
 - (3) It is composed of three non-cellular zones.
 - (4) It shows radial cytoplasmic streaming.
50. If a bacterial cell divides once every minute and takes 23 minutes to fill a bottle. How much time it will take to fill half the bottle:
- (1) 24 min
 - (2) 22 min
 - (3) 46 min
 - (4) 21 min

