



विद्या सर्वार्थ साधिका

ANANDALAYA
ANNUAL EXAMINATION
Class: XI

Subject: Biology (044)

Date : 28-02-2025

MM : 70

Time: 3 Hrs

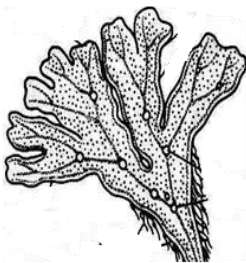
General Instructions:

1. This question paper contains 33 questions in all. All questions are compulsory.
2. The question paper is divided into five sections - Sections A, B, C, D and E.
3. Section A - questions 1 to 16 are Multiple Choice (MCQ) type questions carries 1 mark each.
Section B - questions 17 to 21 are Very Short Answers (VSA) type questions carries 2 marks each.
Section C - questions 22 to 28 are Short Answer (SA) type questions carries 3 marks each.
Section D - questions 29 and 30 are case-based questions carries 4 marks each.
Section E - questions 31 to 33 are Long Answer (LA) type questions carries 5 marks each.
4. There is no overall choice. However, an internal choice has been provided in Sections B, C, D and E.
You must attempt only one of the alternatives in such questions.
5. Wherever necessary, the neat and properly labelled diagrams should be drawn.

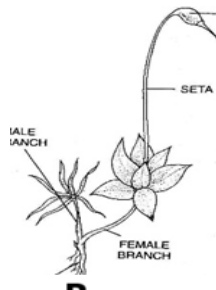
SECTION A

1. Aristotle classified plants into herbs, shrubs and trees based on _____. (1)
(A) External Morphological characters (B) Anatomical features
(C) Physiological features (D) Internal Morphological characters

2. Observe and identify the odd one from the given pictures: (1)



A



B



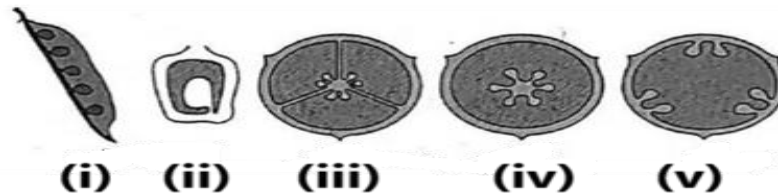
C



D

3. Which place is meant for the conservation of biodiversity in the natural habitat? (1)
(A) Zoological Garden and National Park (B) Wildlife Sanctuary and National Park
(C) Botanical Garden and Zoological Garden (D) National Park and Botanical Garden
4. The intervertebral disc is found in the vertebral column of _____. (1)
(A) Reptiles (B) Amphibians (C) Mammals (D) Birds
5. Which among the following is the correct process during each cardiac cycle? (1)
(A) The volume of blood pumped out by the right and left ventricles is the same
(B) The volume of blood pumped out by the right and left ventricles is different
(C) The volume of blood received by each atrium is different
(D) The volume of blood received by the aorta and pulmonary artery is different
6. Phosphoenolpyruvate is the primary CO₂ acceptor in _____. (1)
(A) Both C₃ and C₄ plants (B) C₃ plants
(C) C₄ plants (D) Both C₂ and C₄ plants

7. Apical dominance expressed in dicotyledonous plants is due to the presence of more _____ in the apical bud than in the lateral ones. (1)
 (A) Auxin (B) Gibberellin (C) Cytokinin (D) Ethylene
8. An open circulatory system occurs in _____. (1)
 (A) Reptiles (B) Aves (C) Humans (D) Insects
9. Identify the different types of placentation shown in the figure and select the correct option: (1)



Option	(i)	(ii)	(iii)	(iv)	(v)
(A)	Axile	Marginal	Free central	Parietal	Basal
(B)	Marginal	Basal	Axile	Free central	Parietal
(C)	Marginal	Axile	Parietal	Free Central	Basal
(D)	Marginal	Parietal	Axile	Basal	Free -central

10. The dialysing unit (artificial kidney) contains a fluid similar to the plasma. Identify the correct combination of the plasma fluid used in haemodialysis from the given. (1)
 (A) Dialysing fluid = Plasma – Urea (B) Dialysing fluid = Plasma + Urea
 (C) Dialysing fluid = Plasma + Glucose (D) Dialysing fluid = Plasma + Uric acid
11. The majority of carbon dioxide (CO₂) released from body tissues into the blood is in the form of _____. (1)
 (A) Carbaminohaemoglobin in RBCs
 (B) 70% carbamino-haemoglobin and 0% bicarbonate
 (C) Free CO₂ in Blood Plasma
 (D) Bicarbonate in Blood Plasma and RBCs
12. In a cell cycle, the period between two M phases is called _____. (1)
 (A) Interphase (B) Late Prophase (C) Early Prophase (D) Telophase

Questions 13 to 16 consist of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below:

- (A) Both (A) and (R) are true and (R) is the correct explanation of (A).
 (B) Both (A) and (R) are true and (R) is not the correct explanation of (A).
 (C) (A) is true, but (R) is false.
 (D) (A) is false, but (R) is true.

13. (A): Anabaena inhabits root nodules of leguminous plants. (1)
 (R): Leguminous plants are an example of symbiotic nitrogen fixation.
14. (A): The amino acid glycine is a nonessential amino acid. (1)
 (R): Glycine cannot be synthesised in the body.
15. (A): Cyclic photophosphorylation synthesises ATP. (1)
 (R): ATP synthesis in cyclic photophosphorylation is not associated with NADPH formation.
16. (A): The adrenal gland is called as the ‘fight and flight’ gland. (1)
 (R): The hormones epinephrine and norepinephrine help the body combat against stress and emergency conditions.

SECTION B

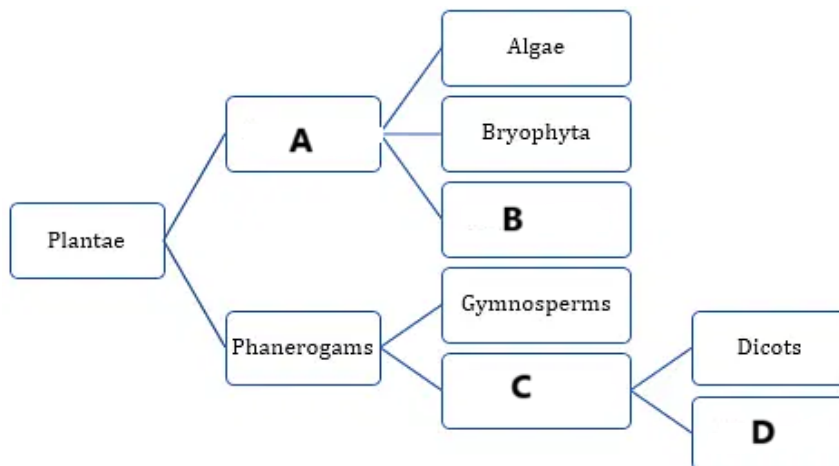
17. Attempt either option (A) or (B).

- (A) Tapeworms are the endoparasites found inside the host body. Enlist the adaptive features that enable them to survive in those conditions. (2)

OR

- (B) Write any two differences between Chondrichthyes and Osteichthyes.

18. Identify A, B, C and D in the schematic representation of plant classification. (2)



19. Represent the hypothalamus and pituitary gland connections diagrammatically. (2)

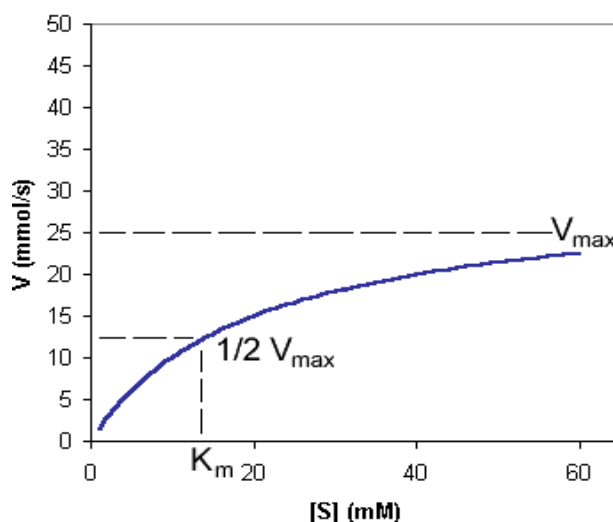
20. (a) Why does the rate of photosynthesis decrease at higher temperatures? (2)
 (b) How many turns of the Calvin cycle are required to generate one mole of glucose and why?

21. Attempt either option (A) or (B).

- (A) What are the pH conditions required for enzyme catalysis? (2)

OR

- (B) The graph shows the effect of the substrate concentration on enzyme activity. Explain V_{\max} and K_m which are plotted on the graph.



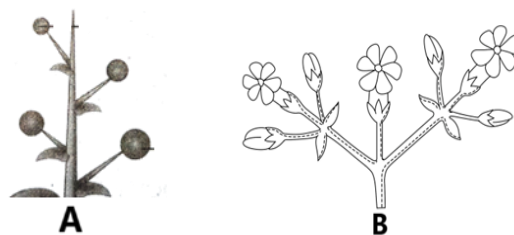
SECTION C

22. (a) Name the disorder of blood circulation that shows the following diagnosis: (3)
 (i) Acute chest pain due to failure of O_2 supply to heart muscles
 (ii) Increased systolic pressure
 (b) What do ANF and ADH abbreviations stand for in the context of excretory functions?

23. What are the reasons for the arthropods to constitute the largest group of the animal kingdom? (3)
24. (a) Name the hormone which is (3)
 (i) in gaseous form (ii) responsible for phototropism (iii) used for killing weeds
 (b) Explain the term dedifferentiation process that occurs in plants with an example.

25. Attempt either option (A) or (B).

- (A) An axis-bearing flower in a particular fashion, is called an inflorescence. The two major types of inflorescences are shown in the figures A and B.
 (a) Identify the type of inflorescence, shown in A and B.
 (b) What forms the basis for this classification?
 (c) Write one more difference between the two.

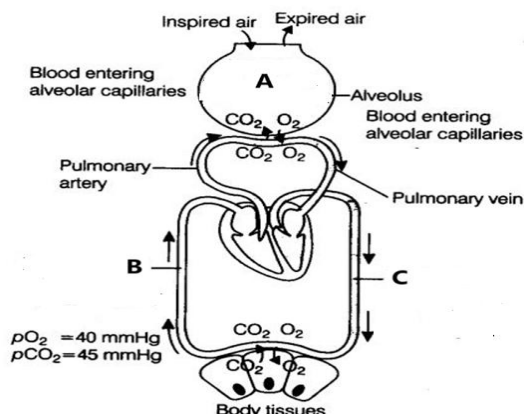


OR

- (B) The two types of compound leaves are given in the figures A and B .
 (a) Identify the type of compound leaves, A and B.
 (b) Give an example for each.
 (c) How do they differ from each other?



26. In which phase of meiosis are the following structures formed in the cell? (3)
 (a) Synaptonemal complex (b) Recombination nodules (c) Termination of chiasmata
 (d) Appearance of enzyme recombinase (e) Interkinesis (f) Formation of dyad of cells
27. The diagram illustrates the exchange of gases at the alveolus and the body tissues with blood and the transport of oxygen and carbondioxide. (3)
 (a) Define the term partial pressure.
 (b) Write the partial pressure of oxygen and carbondioxide labelled as A and C.
 (c) Which type of blood flows through the part labelled as B?
 (d) Compared to O_2 , the diffusion rate of CO_2 through the diffusion membrane per unit, the difference in partial pressure is much higher. Justify the given statement.



28. In equational division, the telophase stage is the reverse of the prophase stage. Explain. (3)

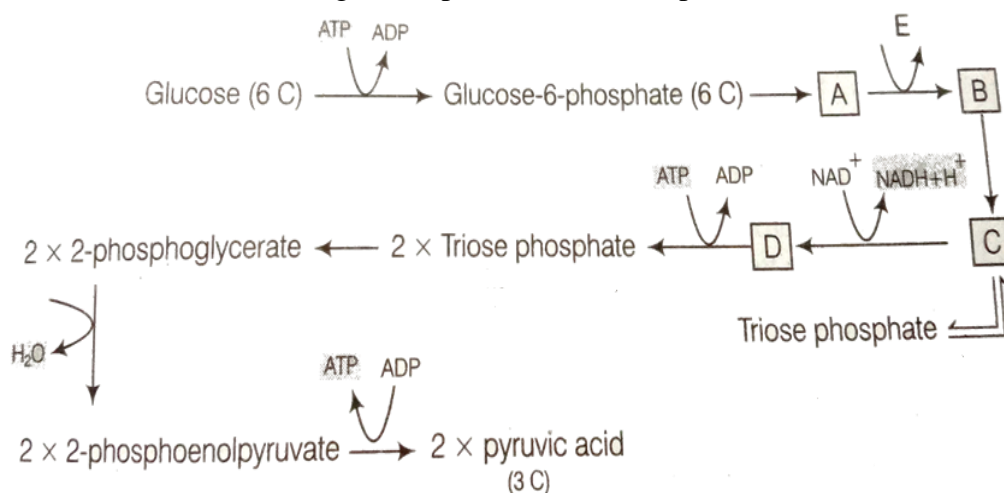
SECTION D

29. Plants are multicellular eukaryotes with tissue systems that carry out specific functions. Plant tissue systems fall into one of two general types: meristematic tissue, and permanent tissue. Meristematic tissue cells are undifferentiated and they continue to divide and contribute to the growth of the plant. Meristems produce cells that quickly differentiate and become permanent tissue. Such cells take on specific roles and lose their ability to divide further. They differentiate into three main types: epidermal, vascular, and ground tissue. Dermal tissue covers the plant and the ground tissue serves as a supporting matrix for the vascular tissue.
 (A) In plants many tissue systems have been distinguished. Name any two of them. (1)
 (B) Name four distinct regions of the ground tissue system. (2)
 Attempt either subpart (C) or (D).
 (C) Describe the type of vascular bundle present in dicot roots. (1)

OR

- (D) What are trichomes and where are they located? (1)

30. The figure given below shows the steps in glycolysis. Fill in the missing steps A, B, C, and D, also indicate whether ATP is being used up or released at step E.



- (A) In the human body, pyruvic acid is the key product of glycolysis. Name the products that are formed from pyruvic acid under anaerobic conditions. (1)
- (B) Replace A, C, D and E given in the figure with appropriate words or terms. (2)
- Attempt either subpart (C) or (D).*
- (C) Name the triose phosphate formed from C and D. (1)
- OR**
- (D) What is the net gain of ATP molecules from the glycolysis? (1)

SECTION E

31. *Attempt either option (A) or (B).*
- (A) (a) How is the five-kingdom classification advantageous over the two-kingdom classification? (5)
- (b) Some symbiotic organisms are pollution indicators. Describe them.
- (c) Diatoms are referred to as 'diatomaceous earth'. Explain.
- OR**
- (B) (a) A plant is haploid and has rhizoids. It has a thallus body. It needs water to complete its life cycle and produces motile male gametes. Name the plant group it belongs to and write any of its four characteristic features.
- (b) If the diploid number of chromosomes of a flowering plant is 36 chromosomes. What would be the chromosome number of the male gamete, zygote, seed cells and endosperm of that flowering plant?
32. *Attempt either option (A) or (B).*
- (A) (i) The fluctuation of calcium ion concentration in the blood affects our muscle contraction. Does it lead to tetany in certain cases? (5)
- (ii) Explain the contraction and relaxation of skeletal muscle that helps in body movements.
- OR**
- (B) During resting potential, the axonal membrane is polarised. Explain the movement of positive and negative ions leading to polarisation of the neuron axon with the help of diagrams.
33. *Attempt either option (A) or (B).*
- (A) Explain the fluid mosaic model of cell membrane given by Singer and Nicolson with the help of a diagram. (5)
- OR**
- (B) (a) List any four functions of the cell wall.
- (b) Draw the diagram of the Golgi apparatus and explain its structure and functions.