PART – A

BOTANY

(Maximum : 30 Scores) **Time : 1 Hour**

Cool-off time : 10 Minutes

I. Answer any 3 questions from 1 to 6. Each carries 1 score. **(3 × 1 = 3)**

1. Observe the first pair and fill in the blank.

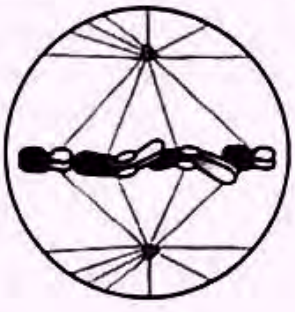
   Monera : Prokaryote

   Protista : _____

2. Fill in the blank.

   The type of inflorescence in which main axis continues to grow is _____.

3. Observe the given diagram. Identify the stage of mitosis.



4. Name a gaseous plant hormone.

5. Choose the correct pair.

   (i) Lichen : association of Fungi and root of higher plants

   (ii) Saprophytes : absorb organic matter from dead substrates

   (iii) Mycorrhiza : association of Fungi and algae

6. Fill in the blank.

   Decomposition of organic nitrogen of dead plants and animals into ammonia is called _____.

II. Answer any 9 questions from 7 to 24. Each carries 2 scores. **(9 × 2 = 18)**

7. Name the male and female sex organs in Bryophytes.

8. Match the following :

A	B
(i) Chloroplast	Store carbohydrate
(ii) Amyloplast	Contains carotenoids
(iii) Elaioplast	Contains chlorophyll
(iv) Chromoplast	Store oils and fats

9. What are simple tissues ? Write two examples.

10. The tissue between the upper and lower epidermis in dorsi-ventral leaf is called mesophyll tissue.

    (a) Name the two types of cells seen in mesophyll tissue.

    (b) What is the function of mesophyll tissue ?

11. Mitosis is often said as equational division. Why ?

12. Given below are some characteristics of dicot root and dicot stem. Arrange them under suitable columns in the table provided.

    (a) Presence of casparian strips.

    (b) Vascular bundles arranged in the form of a ring.

    (c) Two or four xylem and phloem patches.

    (d) Conjoint, open, vascular bundles with endarch protoxylem.

Dicot root	Dicot stem
•	•
•	•

13. Pathway of water movement in the root of plants is mainly by two ways. Which are the two pathways ?

14. List any two functions of mesosomes in Prokaryotic cells.

15. All minerals cannot be passively absorbed by root. Justify the statement.

16. Differentiate between alternate and opposite phyllotaxy.

17. Write the name of any one type of chromosome classified based on the position of centromere. Mention its peculiarity.

18. Complete the given table with appropriate terms.

Classes of algae	Common name	Stored food
Chlorophyceae	(b)	(d)
Pheophyceae	(c)	Mannitol
(a)	Red algae	Floridean starch

19. Write any two reasons for seed dormancy ?

20. Calvin cycle or C_3 cycle in photosynthesis have 3 stages.

    (a) Identify the three stages of Calvin cycle.

    (b) Which is the primary CO_2 acceptor in Calvin cycle ?

21. Glycolysis is common in aerobic and anerobic respiration.

    (a) What is Glycolysis ?

    (b) Where does Glycolysis take place ?

22. List out any two characteristic features of C_4 plants.

23. Given below are some features of cyclic and non-cyclic photophosphorylation. List out the features of non-cyclic photophosphorylation from the hints provided.

(a) NADPH and ATP formed.

(b) Only one photo system involved.

(c) Splitting of water occurs.

(d) Both photosystems involved.

(e) Only ATP is formed.

(f) Oxygen is evolved.

24. Accessory pigments are involved in the process of photosynthesis.

(a) Name any two accessory pigments.

(b) Write any one function of accessory pigment.

III. Answer any 3 questions from 25 to 30. Each carries 3 scores. **(3 × 3 = 9)**

25. Differentiate between aerobic and anaerobic respiration.

What are the end products obtained during anaerobic respiration of glucose in cleast cells ?

26. Plant growth regulators play important roles in growth promoting and inhibiting activities.

(a) Which hormone is known as stress hormone ?

(b) Name the hormone which is responsible for the phenomenon called bolting in rosettee plants ?

(c) Which hormone plays role in apical dominance of plants ?

27. The first stage of meiosis I is Prophase I which is further sub divided into five phases.

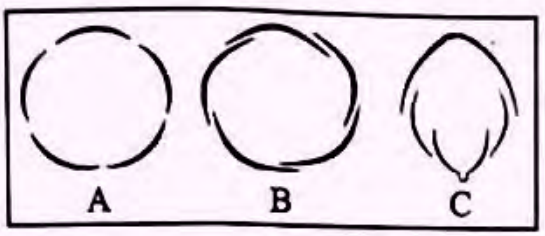
(a) Write the five phases of prophase I in correct sequential order.

(b) Identify the phase in which crossing over occurs.

28. What are respiratory substrates ? Name any two substances used as respiratory substrate in plants.

29. Nodule formation involves a sequence of multiple interactions between Rhizobium and root of host plant. What are the steps involved in formation of a root nodule ?

30. Observe the given diagram representing three types of aestivation seen in corolla.



(a) Identify the types of aestivation labelled A, B and C.

(b) What are the peculiarities of corolla in flowers with aestivation labelled 'C' ?

PART – B

ZOOLOGY

(Maximum : 30 Scores) **Time : 1 Hour**

Cool-off time : 10 Minutes

I. Answer any 3 questions from 1 to 6. Each carries 1 score. **(3 × 1 = 3)**

1. The largest part of human brain.

2. ERV + TV + IRV = _____

3. Name a protein enables glucose transport into cells.

4. The opening between right atrium and right ventricle is guarded by _____ .

5. Select a limbless amphibian from the following :

   (Bufo, Salamander, Ichtyophis, Hyla)

6. Pick up an acoelomate animal.

   (Hookworm, Roundworm, Earthworm, Tapeworm)

II. Answer any 9 questions from 7 to 24. Each carries 2 scores. **(9 × 2 = 18)**

7. Note the relationship between the first two words and write a suitable word for the fourth place.

   (a) Ctenoplana – Combplate ; Neries – _____

   (b) Taenia – Flamecells ; Apis – _____

8. The animal has worm like body and a rudimentory stomochord in its collar region.

   (a) Identify its phylum.

   (b) Write any two salient feature of this phylum.

9. Complete the flow chart of cardiac impulse from the terms given in brackets

SA Node ⟶

(Bundle of His, Ventricle, Purkinje fibers, AV Node)

10. How does a manual helpful in taxonomy ?

11. From the following find out the wrong statements and rewrite it correctly :

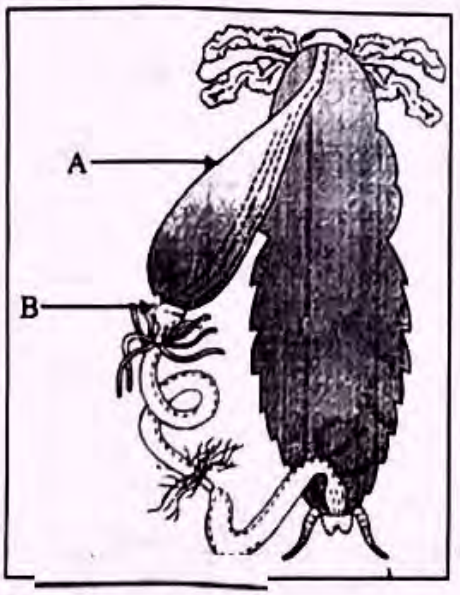
(a) Parietal cells secrete pepsinogen.

(b) Amylase is present in saliva.

(c) Gastric juice contains nucleases.

(d) Bile activates lipase.

12. Digestive system of cockroach



(a) Label A and B.

(b) Write one function of A and B.

13. Name the type of synovial joints present in following body parts :

(a) Knee joint

(b) Between atles and axis

(c) Between adjacent carpels

(d) Between carpels and metacarpels

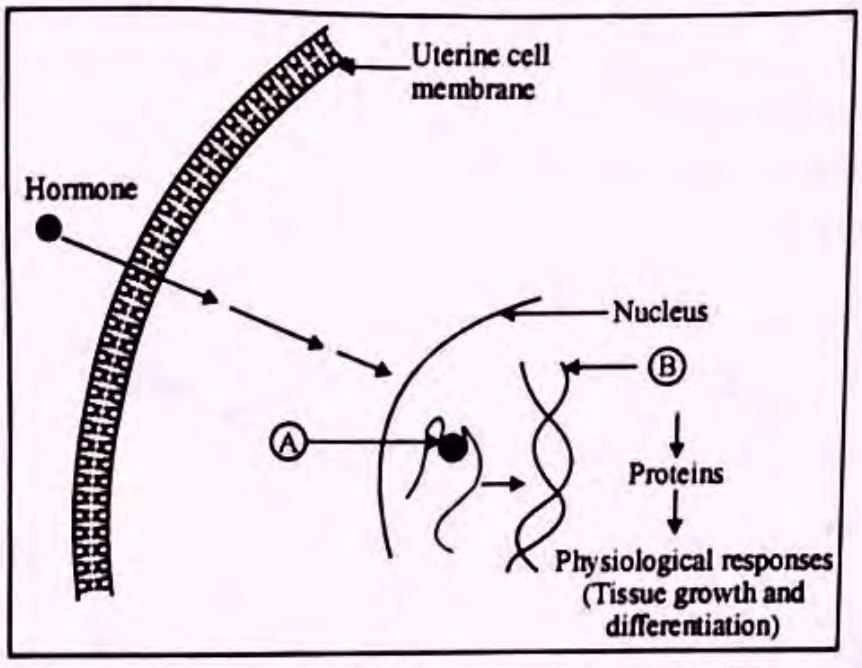
14. Distinguish between :

(a) Phototopic vision and scotopic vision

(b) Olfactory receptors and gustatory receptors

15. Name the mineral ion which play crucial role in muscle contraction. Explain its role.

16. Diagrammatic representation of the mechanism of hormone action.



(a) In the given diagram A and B represents

(b) Name any two steroid hormones.

17. Fill in the blanks with suitable words :

Gland	Hormone	Function
Pineal gland	(a) _____	Regulation of 24 hrs rhythm
(b) _____	Thymosin	(c) _____
(d) _____	Androgen	Stimulate spermatogenesis

18. Coelenterates, Ctenophorans and Echinoderms have similar kind of body plan. Substantiate.

19. 

(a) Identify the animal in this picture.

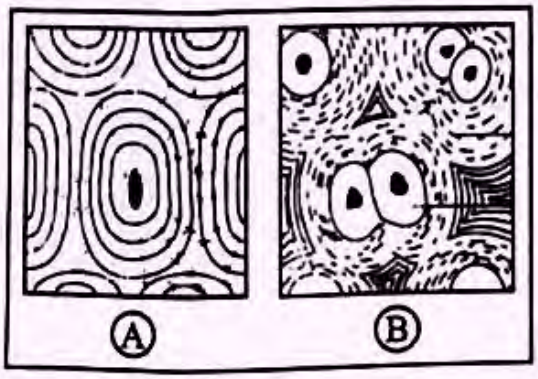
(b) Name the class in which this animal belongs.

(c) Write any two characters of this class.

20. (a) Name any three digestive enzymes present in *Succus entericus*.

(b) Explain how it does in fat digestion.

21. Observe the picture :



(a) Name these specialized connective tissue.

(b) Write any two difference between these two.

22. Find out the suitable term from the box for the symptoms stated.

(a) Wild contractions in the muscle due to low Ca^{++} in the body fluid

(b) Inflammation of joints

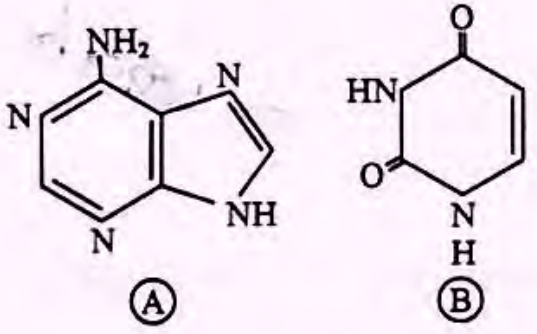
(c) Decreased bone mass and increased chance of fracture

(d) Inflammation of joints due to accumulation of uricacid crystal.

Arthritis, Tetany, Muscular dystrophy, Osteoporosis, Gout

23. (a) Identify the following nitrogen bases A and B.

(b) Write the nucleosides of these.



24. ANF mechanism acts as a check on the Renin Angiotensin Mechanism. Explain how.

III. Answer any 3 questions from 25 to 30. Each carries 3 scores. **(3 × 3 = 9)**

25. All animal tissues specialized junctions provide both structural and functional link between its individual cells. Name the cell junctions and comment on its function.

26. Arrange the following terms in three columns based on their group characters.

Spicules, Mantle, Compound eye, Foot, Spongocoel, Antinna

27. Describe the role of diaphragm and other muscles in breathing.

28. Explain the mechanism to prevent excess loss of blood from the body.

29. Draw a flow chart of reflex pathway.

30. Catalytic activity is lost when the co-factors are removed from the enzyme.

    (a) What are co-factors ?

    (b) Name two kinds of co-factors.