Reg. No. : .....

Name : .....

FY-426

FIRST YEAR HIGHER SECONDARY EXAMINATION, MARCH 2023

Part – III

BIOLOGY

(Botany & Zoology)

Maximum : 60 Scores

Time : 2 Hours

Cool-off time : 15 Minutes

Preparatory Time : 10 Minutes

General Instructions to Candidates :

- There is a 'Cool-off time' of 15 minutes in addition to the writing time. Further there is a '10 minutes' 'Preparatory Time' at the end of the Botany Examination and before the commencement of Zoology Examination.
- Use the 'Cool-off time' to get familiar with questions and to plan your answers.
- Read questions carefully before answering.
- Read the instructions carefully.
- Calculations, figures and graphs should be shown in the answer sheet itself.
- Malayalam version of the questions is also provided.
- Give equations wherever necessary.
- Electronic devices except non-programmable calculators are not allowed in the Examination Hall.

വിദ്യാർത്ഥികൾക്കുള്ള പൊതുനിർദ്ദേശങ്ങൾ :

- നിർദ്ദിഷ്ട സമയത്തിന് പുറമെ 15 മിനിറ്റ് 'കൂൾ ഓഫ് ടൈം' ഉണ്ടായിരിക്കും. കൂടാതെ ബോട്ടണി പരീക്ഷയ്ക്കുശേഷം സുവോളജി പരീക്ഷ തുടങ്ങുന്നതിനുമുമ്പ് '10 മിനിറ്റ്' തയ്യാറെടുപ്പുകൾ നടത്തുന്നതിനായി നല്കുന്നതാണ്.
- 'കൂൾ ഓഫ് ടൈം' ചോദ്യങ്ങൾ പരിചയപ്പെടാനും ഉത്തരങ്ങൾ ആസൂത്രണം ചെയ്യാനും ഉപയോഗിക്കുക.
- ഉത്തരങ്ങൾ എഴുതുന്നതിന് മുമ്പ് ചോദ്യങ്ങൾ ശ്രദ്ധാപൂർവ്വം വായിക്കണം.
- നിർദ്ദേശങ്ങൾ മുഴുവനും ശ്രദ്ധാപൂർവ്വം വായിക്കണം.
- കണക്ക് കൂട്ടലുകൾ, ചിത്രങ്ങൾ, ഗ്രാഫുകൾ, എന്നിവ ഉത്തരപേപ്പറിൽ തന്നെ ഉണ്ടായിരിക്കണം.
- ചോദ്യങ്ങൾ മലയാളത്തിലും നല്കിയിട്ടുണ്ട്.
- ആവശ്യമുള്ള സ്ഥലത്ത് സമവാക്യങ്ങൾ കൊടുക്കണം.
- പ്രോഗ്രാമുകൾ ചെയ്യാനാകാത്ത കാൽക്കുലേറ്ററുകൾ ഒഴികെയുള്ള ഒരു ഇലക്ട്രോണിക് ഉപകരണവും പരീക്ഷാഹാളിൽ ഉപയോഗിക്കുവാൻ പാടില്ല.

PART – A

BOTANY

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

I. Answer any 3 questions from 1 to 5. Each carries 1 score. **(3 × 1 = 3)**

1. Fill in the blank :

   The algal component in lichen is known as _____.

2. Choose the correct answer :

   The R.Q. (Respiratory Quotient) of carbohydrate is _____.

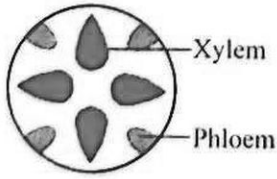
   (0.9, 1, 0, 0.7)

3. Observe the relationship of first pair and fill in the blank :

   algin : Brown algae

   Carrageen : _____

4. Name the type of vascular bundle in the figure :



5. Fill in the blank :

   The site of dark reaction in photosynthesis is _____ part of chloroplast.

II. Answer any 9 questions from 6 to 16. Each carries 2 scores. **(9 × 2 = 18)**

6. Expand the following :

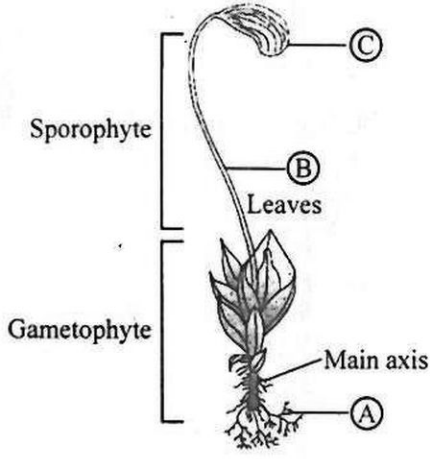
   (A) PPLO

   (B) SER

7. Observe the diagram given below :

   (i) Identify this bryophyte.

   (ii) Label the parts A, B and C.

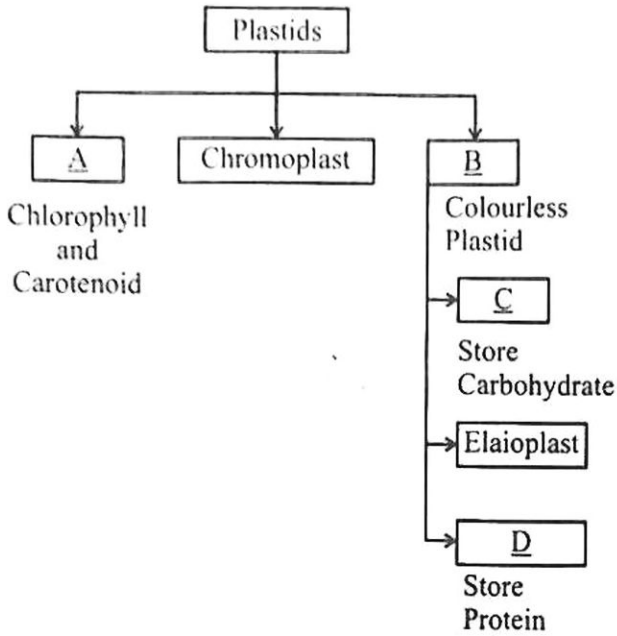


8. Match the following :

A	B
Amoeboid Protozoans	Paramoecium
Flagellated Protozoans	Entamoeba
Ciliated Protozoans	Plasmodium
Sporozoans	Trypanosoma

9. Fill in the blanks with appropriate terms given below :

Chloroplast, Amyloplasts, Lencoplast, Aleuroplast

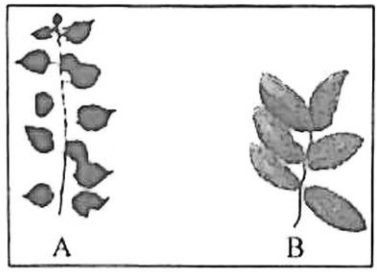


10. Karyokinesis in Mitosis involves four stages. What are they ?

11. The following figures A & B show two different types of phyllotaxy :

(i) Define phyllotaxy.

(ii) Write the name of phylloxy A & B.



12. Write any two uses of Ethephon.

13. The first step in respiration is glycolysis.

(A) Define glycolysis.

(B) Write the site of glycolysis in a cell.

(C) Enzyme responsible for conversion of glucose to glucose-6-phosphate.

14. Certain physiological effects in plants are given below :

Name the plant growth regulators responsible for it.

(A) Bolting

(B) Apical dominance

(C) Ripening of fruit

(D) Closure of stomata

15. Identify the sub stages of prophase I of Meiosis in which the following events takes place :

(A) Crossing over

(B) Pairing of homologous chromosome

(C) Terminalisation of Chiasmata

(D) Dissolution of synaptonemal complex

16. Some characteristic features of C_3 and C_4 plants are given below :

- Kranz anatomy absent
- Lack photorespiration
- First product of CO_2 fixation is PGA.
- Primary CO_2 acceptor is PEP.

Arrange them as follows :

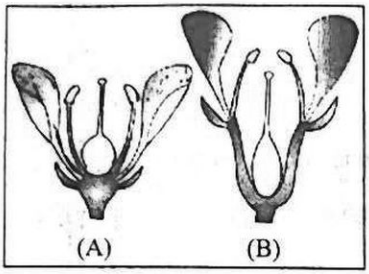
C_3 Plants	C_4 Plants
•	•
•	•

III. Answer any 3 questions from 17 to 20. Each carries 3 scores. **(3 × 3 = 9)**

17. The given figure shows different types of flowers based on position of floral parts on thalamus :

    (i) Identify (A) & (B).

    (ii) Explain Epigynous flower.



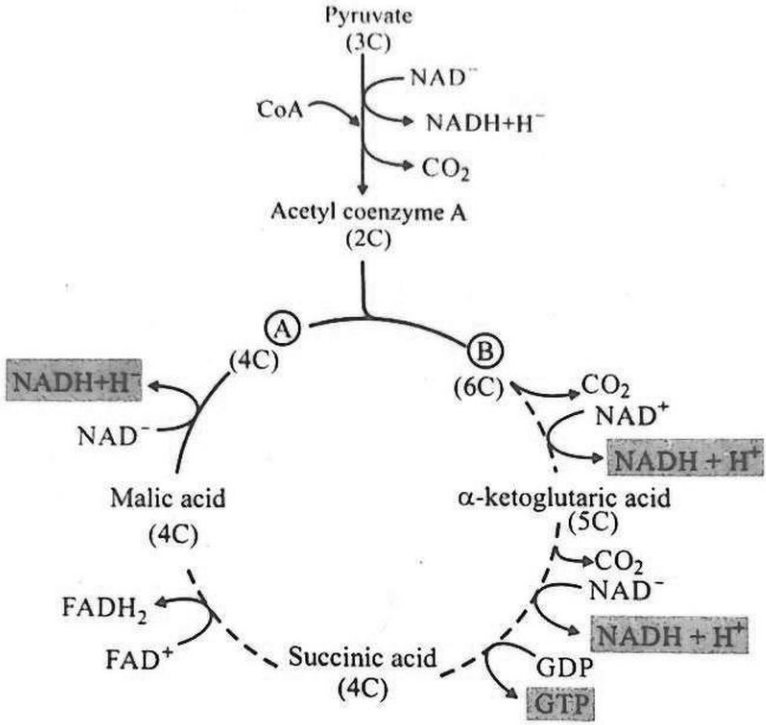
18. Write any 3 external and internal features that affect photosynthesis.

19. The following are the anatomical features of flowering plants. Arrange these features in the table given below :

- Spongy parenchyma
- Hypodermis present
- Exarch Xylem
- Conjoint and open vascular bundle
- Large empty bulliform cells
- Endodermis with Casparian strip

Root	Stem	Leaf
•	•	•
•	•	•

20. Observe the figure given below and answer the following questions.



(i) Write the name of this cycle.

(ii) Identify A & B in the cycle.

PART – B

ZOOLOGY

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

I. Answer any 3 questions from 1 to 5. Each carries 1 score. **(3 × 1 = 3)**

1. Name the enzyme that accelerate the following reaction :

$$CO_2 + H_2O \rightleftharpoons H_2CO_3 \rightleftharpoons HCO_3^- + H^+$$

2. The double walled membrane that protects the heart is _____.

3. Scientific name of lion is given below. Which one is correctly written ?
   (a) Panthera leo
   (b) pantheraleo
   (c) Panthera Leo
   (d) panthera Leo

4. The disorder in which stone or insoluble mass of crystallised salts formed within the kidney.

5. Name the fluid filled space that separate the membranes of pre and post synaptic neurons at a chemical synapse.

II. Answer any 9 questions from 6 to 16. Each carries 2 scores. **(9 × 2 = 18)**

6. (a) Name the tissue that act as pacemaker in human heart.
   (b) What is the significance of pacemaker in the functioning of heart ?

7. Certain hormones that regulate Kidney function are given in Column-A. Their specific functions are given in the Column-B. Match them suitably.

A	B
• ADH	• Powerful Vaso Constrictor
• Angiotensin II	• Water reabsorption
• ANF	• Reabsorption of Na^+
• Aldosterone	• Cause dilation of blood vessels

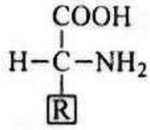
8. The processes involved in muscle contraction are given below. Arrange them in correct sequential order. (The first step is given correct)

- A signal sent out by CNS.
- Binding of Ca^{++} with troponin.
- Release of a neurotransmitter.
- Remove the masking of active sites for myosin.
- Release of Ca^{++} into Sarcoplasm.

9. Select Poiokilothermous animals from the list :

Corvus, Felis, Rana, Calotes, Scoliodon, Macaca, Hippocampus, Pavo.

10. General structure of amino acid is given :

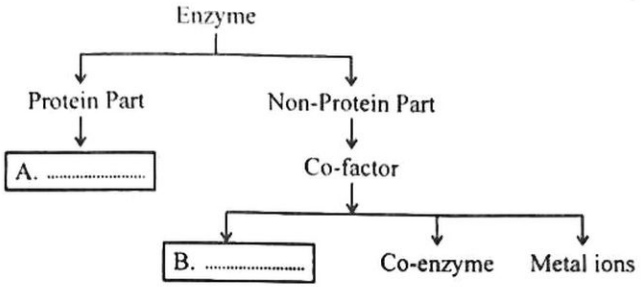


Draw the structure of the amino acids, (a) glycine and (b) Serine.

11. (a) Write any two types of synovial joints.

(b) Identify its location.

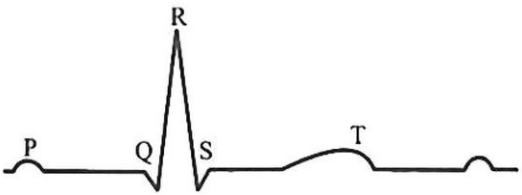
12. Observe the illustration :



(a) Identify A & B and fill the blanks.

(b) What happens when the co-factor is removed from the enzyme ?

13. Observe the diagrammatic presentation of ECG.



(a) What is the expansion of ECG ?

(b) What do P and QRS complex indicate ?

14. Identify each phylum from the characteristics given :

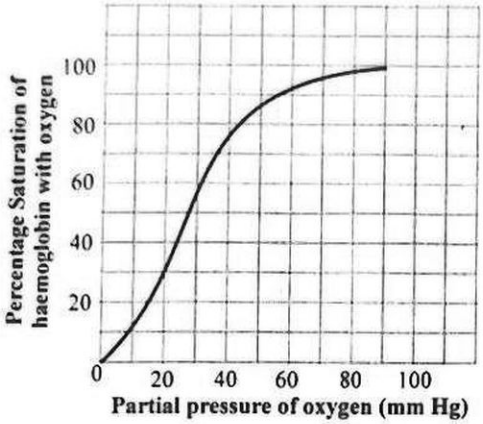
(a) Comb plates are the locomotory organs.

(b) Show alternation of generation.

(c) Presence of Water Vascular System.

(d) Body consists of proboscis, collar and trunk.

15. Observe the graph :



(a) What does the graph represent ?

(b) Write any three conditions in the alveoli that favour the formation of oxyhaemoglobin.

16. Write any two differences between Osteichthyes and Chondrichthyes.

III. Answer any 3 questions from 17 to 20. Each carries 3 scores. **(3 × 3 = 9)**

17. Distinguish between :

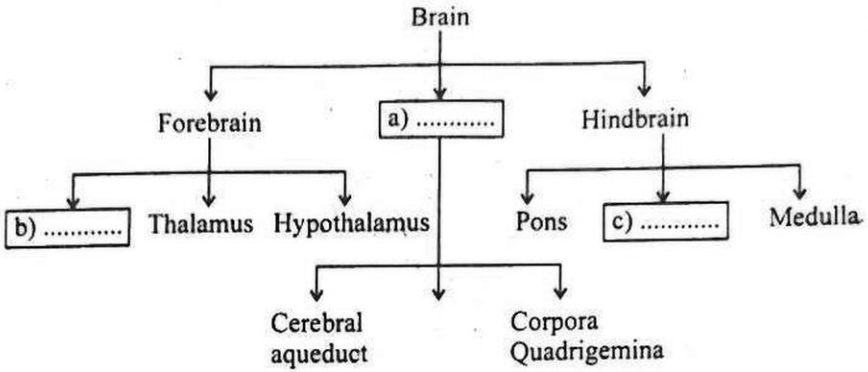
(a) Nucleosides and Nucleotides

(b) Primary metabolites and Secondary metabolites

(c) Ligases and Lyases

18. Explain any two groups of organisms based on Coelom. Give one example for each group.

19. Complete the illustration appropriately.



Name 3 layers of Cranial meninges that protects brain.

Outer layer (d) _____

Middle layer (e) _____

Inner layer (f) _____

20. (a) Name two types of cells in Islets of Langerhans.

(b) Write any one functions of each type of cell.

(c) Name the gland where Islets of Langerhans found.

_____