Reg. No :
Name :

FY-26

FIRST YEAR HIGHER SECONDARY EXAMINATION, MARCH 2020

Part – III
BIOLOGY
(Botany & Zoology)
Maximum : 60 Scores

Time : 2 Hours
Cool-off time : 20 Minutes
Preparatory Time : 5 Minutes

General Instructions to Candidates :

- There is a 'Cool-off time' of 10 minutes each for Botany and Zoology in addition to the writing time of 1 hour each. Further there is a '5 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 ബോട്ടണിയ്ക്കും സുവോളജിയ്ക്കും 10 മിനിറ്റ് വീതം 'കൂൾ ഓഫ് ടൈം' ഉണ്ടായിരിക്കും. കൂടാതെ ബോട്ടണി പരീക്ഷയ്ക്കുശേഷം സുവോളജി പരീക്ഷ തുടങ്ങുന്നതിനുമുമ്പ് '5 മിനിറ്റ്' തയ്യാറെടുപ്പുകൾ നടത്തുന്നതിനായി നല്കുന്നതാണ്. ഈ വേളകളിൽ ചോദ്യങ്ങൾക്ക് ഉത്തരം എഴുതാനോ, മറ്റുള്ളവരുമായി ആശയ വിനിമയം നടത്താനോ പാടില്ല.
- '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**

Cool-off time : 10 Minutes

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

1. Choose the correct answer. The organelle known as power house of the cell is :

   (a) Ribosome (b) Vacuole

   (c) Mitochondrion (d) Chloroplast

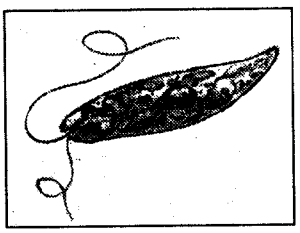
2. Choose the correct answer.

   Casparian strips are present in :

   (a) Dicot root (b) Dicot stem

   (c) Dicot leaf (d) Monocot stem

3. Observe the figure given below. Name the organism.



4. Observe the relationship between the first two terms and fill in the blank.

   Metaphase : Spindle fibres attach to kinetochores.

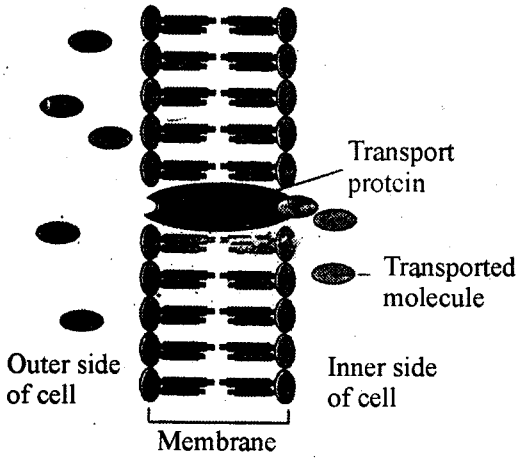
   _____ : Chromatids move to opposite poles.

5. Fill in the blank.

   The number of carbon atoms in acetyl co-enzyme A, which take part in Kreb's cycle is _____.

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

6. Observe the figure given below :



(a) Name the process.

(b) Define the above identified process.

7. Analyse the table given below and fill in the blanks :

(A)	(B)
Zygotene	(a)
(b)	Crossing over
(c)	Dissolution of synaptonemal complex
Diakinesis	(d)

8. Define hydroponics. Write one advantage of it.

9. Peculiarities of certain cell organelles are given below :

a. Involved in protein synthesis.
b. Made up of many flat, disc shaped sacs or cisternae.
c Bear ribosomes on their surface.
d. Rich in hydrolytic enzymes.
e. Membrane is absent.

Copy the table given below and write the above peculiarities in appropriate column.

Lysosome	**Golgi apparatus**	**Ribosome**

10. Analyse the table given below and fill in the blanks a, b, c, d.

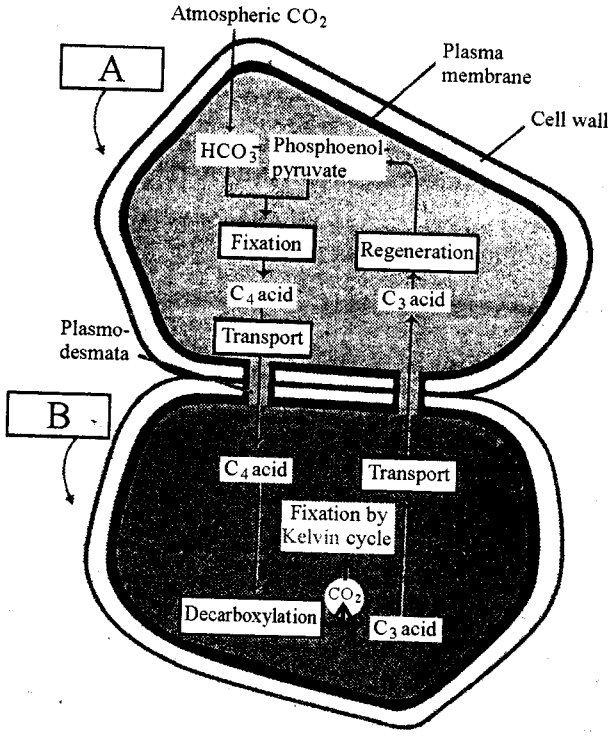
Processes	**Cyclic photo-phosphorylation**	**Non-cyclic photophosphorylation**
Movement of electrons	Cyclic	ⓐ
Number of photosystems	ⓑ	ⓒ
Splitting of water	ⓓ	Absent

11. The first step in respiration is glycolysis.

(a) Define glycolysis.

(b) Write the site of glycolysis.

12. Observe the given figure showing C_4 pathway.



(a) Identify the cells A and B.

(b) Name the C_4 acid formed through this pathway.

(c) Name the enzyme involved in the formation of C_4 acid.

13. Aerobic respiration and anaerobic respiration are two types of respiration.

(a) What is anaerobic respiration ?

(b) Write the change that occurs to pyruvic acid in yeast cells.

14. Notice the three stages of Kelvin cycle given below :

Reduction, Regeneration, Carboxylation

(a) Arrange the above stages in correct order.

(b) Kelvin cycle is also known as C_3 cycle (Pathway). Give reason.

15. Match the items of column A with B :

(A)	(B)
(a) Double fertilisation	(i) Bryophyte
(b) Heterospory	(ii) Algae
(c) Protonema	(iii) Gymnosperm
(d) Naked seeds	(iv) Pteridophyte
	(v) Angiosperm

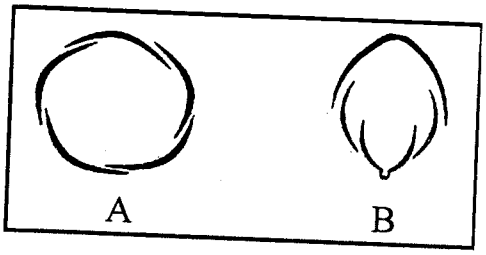
16. Cell theory was formulated by two scientists.

(a) Name the scientists.

(b) Write the two main points in cell theory.

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

17. Observe the figures A and B.



(a) Identify the aestivation A and B.

(b) Write one peculiarity of A.

(c) Name the three kinds of petals in B.

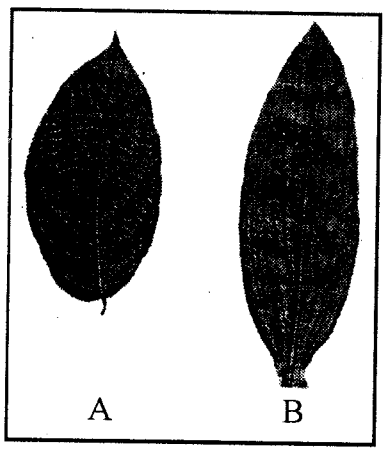
18. The plant growth regulators are divided into growth promoters and growth inhibitors.

(a) Name the three hormones, which are known as plant growth promoters.

(b) Name the growth inhibitor which is known as 'stress hormone'.

(c) Write any two roles of the above identified stress hormone.

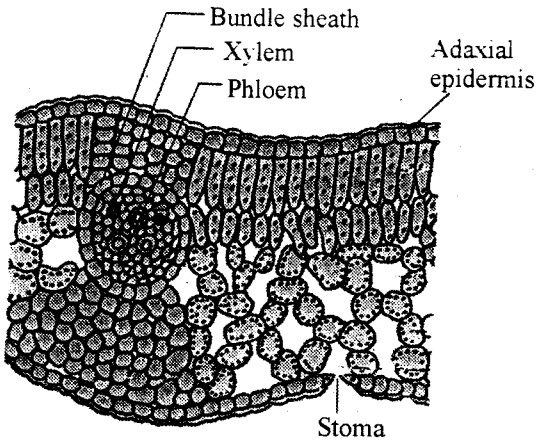
19. Observe the figures A and B given below :



(a) Name the type of venation in A and B.

(b) Define venation.

20. Observe the figure given below :



Write any three features on mesophyll cells from the figure.

PART – B

ZOOLOGY

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

Cool-off time : 10 Minutes

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

1. Select the enzyme that facilitate the following reaction :

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

(a) Succinic dehydrogenase (b) RuBiSCO

(c) Carbonic anhydrase (d) Lipase

2. Which among the following is a primary metabolite ?

Alkaloids, Antibiotics, Amino acids, Flavonoids

3. Name the portion of the myofibril between two successive Z-lines.

(a) H-zone (b) Sarcomere

(c) I-band (d) M-line

4. Identify the word pair applicable to phylum ctenophora.

(a) Nephridia, Parapodia (b) Comb plates, Bio luminiscence

(c) Polyp, Metagenesis (d) Radula, Visceral hump

5. Unit of classification is _____.

(a) Taxon (b) Species

(c) Genus (d) Cell

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

6. Cells of human body perform different types of movement.

Write any two types of movement and the parts that exhibit the movement.

7. Find out the suitable term from the box for the disorders stated.

(a) Accumulation of Urea in blood.

(b) Insoluble mass of crystallised salts in the kidney.

(c) Surgical method for the correction of Renal failures.

(d) Inflammation of glomeruli of kidney.

Dialysis, Kidney transplantation, Glomerulonephritis, Uremia, Renal Calculi

8. Characteristics of certain animals are given.

Arrange them under the 'Class' to which these animals belong.

(i) Skin is moist without scales.

(ii) Body is covered by dry and cornified skin.

(iii) Shed the scales as skin cast.

(iv) Can live in aquatic as well as terrestrial habitats.

9. When substrate concentration increases, the velocity of enzymatic reaction increases at first. After attaining a maximum velocity, it cannot be exceeded by further addition of substrates. Why ?

"The products of digestion like glucose and amino acids are absorbed to the blood by active transport, where as electrolytes like chloride ions are generally absorbed by simple diffusion."

How will you differentiate active transport from simple diffusion ?

11. Distinguish between the following terms :

(a) IRV, ERV

(b) Tidal volume, Residual volume

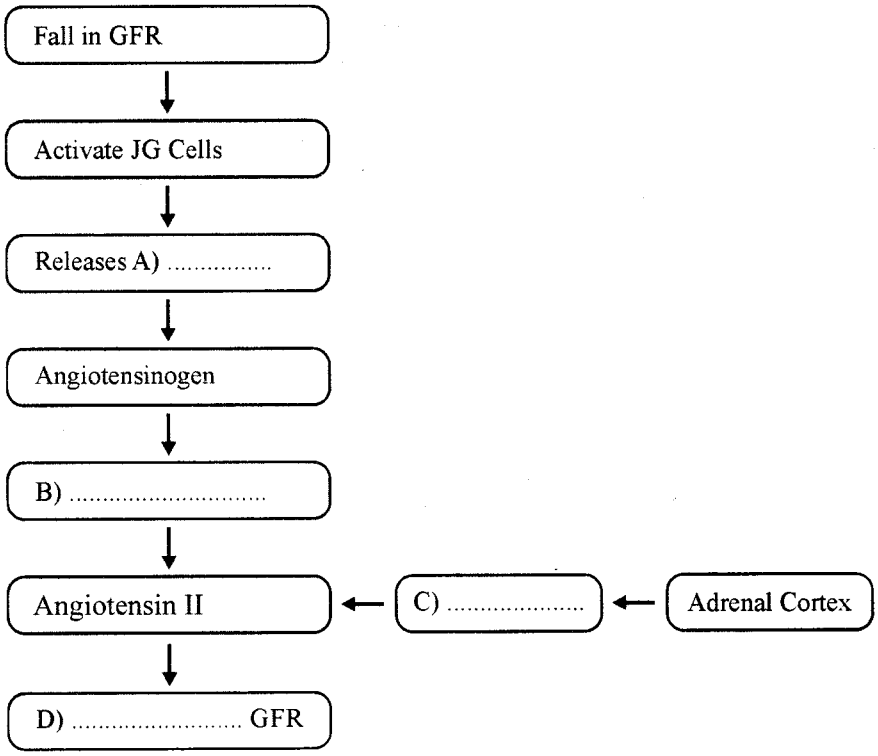
12. Enzymes present in Saliva, gastric juice and intestinal juice are given in the box.

(a) Identify the enzyme present in gastric juice and intestinal juice one each.

(b) Write their digestive function :

Pepsin, Lysozyme, Trypsinogen, Rennin, Lipases, Salivary amylase

13. Complete the flow chart showing the regulation of kidney functioning by Juxta Glomerular Apparatus and Adrenal Cortex.



14. 'Adrenal medulla is the centrally located tissue in the adrenal gland, where as adrenal cortex is located outside.'

How do adrenal cortex and medulla differ in their function ?

15. 'Cockroach is said to be Uricotelic.'

(a) What do you understand about the nature of excretion of Cockroach from this statement ?

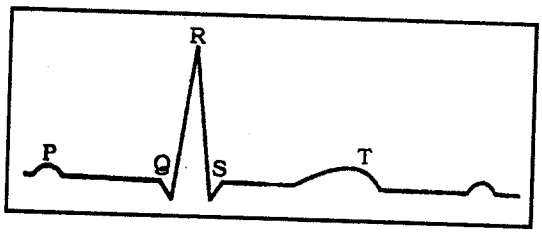
(b) Name two excretory organs of Cockroach.

16. Rewrite the given sentences if there is any mistake in the underlined part.

- Cartilage cells are called <u>osteocycles</u>.
- <u>Bones</u> are rich in Calcium salts.
- Intercalated discs are seen in <u>skeletal muscle</u>.
- <u>Skeletal muscles</u> are striated.

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

17. Observe the diagram.



(a) What does it denote ?

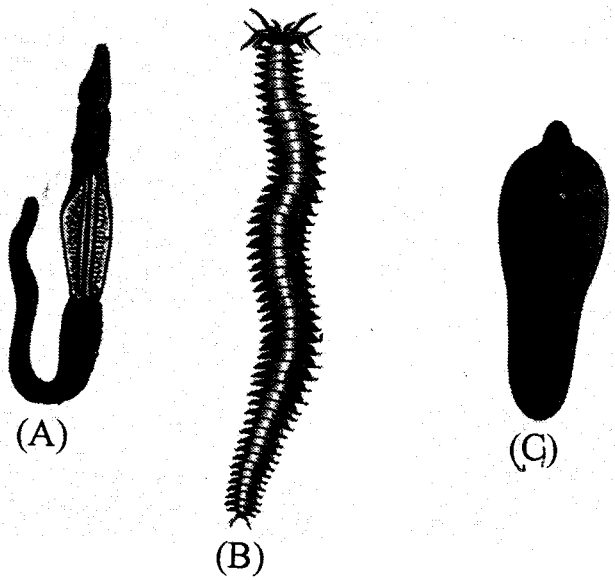
(b) What do P, QRS, T represent ?

(c) What is its clinical significance ?

18. Compete the given table appropriately.

Gland	Hormones	Function
(i) (A) _____	Androgens	Development of male accessory sex organs
(ii) Thymus	(B) _____	(C) _____
(iii) (D) _____	Glucagon	Maintains normal blood glucose levels
(iv) Pineal	(E) _____	(F) _____

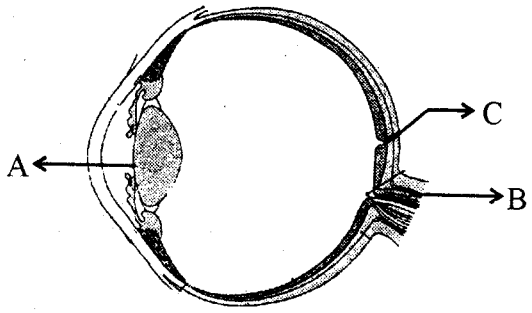
19. Observe the figures.



(a) Identify the organisms A, B & C.

(b) Name the phylum to which each of them belong.

20. Observe the diagram :



(a) Name the parts A & B.

(b) Write the characteristics features of 'C'.

(c) Arrange the given parts of eye in the sequence that light travels from the external environment into the eye.

(Vitreous chamber, lens, cornea, retina, Aqueous chamber)