

**FIRST YEAR HIGHER SECONDARY EXAMINATION, MARCH – 2024**

Part – III

Time : 2 Hours

**BIOLOGY**

Cool-off time : 15 Minutes

**(Botany & Zoology)**

Preparatory Time : 10 Minutes

Maximum : 60 Scores

**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 നൽകുന്നതാണ്.
- '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 നൽകിയിട്ടുണ്ട്.
- ആവശ്യമുള്ള സ്ഥലത്ത് സമവാക്യങ്ങൾ കൊടുക്കണം.
- പ്രോഗ്രാമുകൾ ചെയ്യാനാകാത്ത കാൽക്കുലേറ്ററുകൾ ഒഴികെയുള്ള ഒരു ഇലക്ട്രോണിക് ഉപകരണവും പരീക്ഷാഹാളിൽ ഉപയോഗിക്കുവാൻ പാടില്ല.

PART - A

BOTANY

(Maximum : 30 Scores)

Time : 1 Hour

(3 × 1 = 3)

I. Answer any 3 questions from 1 to 4. Each carries 1 score.

1. Fill in the blank :

The dark reaction of photosynthesis takes place at \_\_\_\_\_ of the chloroplast.

2. Choose the correct answer :

Monocot seed consists of one large and shield shaped cotyledon known as \_\_\_\_\_.

- (a) Aleurone layer (b) Scutellum  
(c) Coleoptile (d) Coleorhiza

3. Which class of algae is commonly known as Brown algae ?

4. Which of these cell organelles is not covered by a membrane ?

- (a) Golgi bodies (b) Endoplasmic reticulum  
(c) Ribosomes (d) Vacuoles

II. Answer any 9 questions from 5 to 15. Each carries 2 scores.

(9 × 2 = 18)

5. (a) Write the name of the phase of Prophase-I of Meiosis in which crossing over takes place. 1

(b) What is the significance of crossing over ? 1

6. Match the following :

(½ × 4)

| Class of Fungi     | Example          |
|--------------------|------------------|
| (a) Phycomycetes   | (i) Agaricus     |
| (b) Ascomycetes    | (ii) Alternaria  |
| (c) Basidiomycetes | (iii) Rhizopus   |
| (d) Deuteromycetes | (iv) Penicillium |

7. (a) What is Glycolysis ? 1

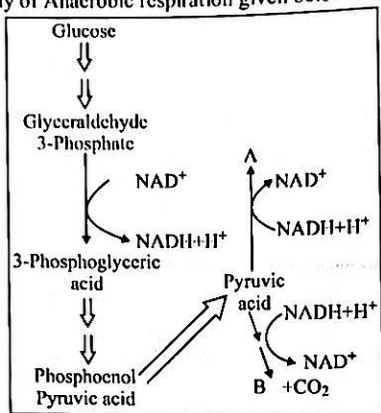
(b) Where does it takes place ? 1

8. (a) Write one function of Abscisic acid. 1

(b) Why Abscisic acid is known as 'Stress hormone' ? 1

9. Write two differences between the anatomy of Stem and Root.

10. Observe the pathway of Anaerobic respiration given below :



(a) Label the compounds marked as A & B. 1

(b) What happens to pyruvic acid in muscles if oxygen is inadequate? 1

11. (a) Write the function of stomata. 1

(b) What is the difference between the shape of Guard cells of Dicot plants and Monocot plants (Grasses)? 1

12. Arrange the given functions of plant hormones in appropriate columns : (½ × 4)

(a) Ripening of fruit

(b) Initiate rooting in stem cutting

(c) Induce parthenocarpy

(d) Breaks seed and bud dormancy

| Auxins | Ethylene |
|--------|----------|
|        |          |

13. Write brief notes about

(a) Thermoacidophiles

(b) Halophiles

14. (a) Which plants are known as naked seeded plants? 1

(b) Why? 1

15. Cell cycle consists of four phases – G<sub>1</sub>, S, G<sub>2</sub> and M. 1

Write one important event takes place during each phase. 1

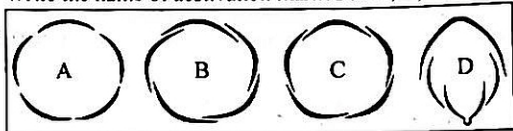
(3 × 3 = 9)

III. Answer any 3 questions from 16 to 19. Each carries 3 scores.

16. Leucoplasts are classified into three types based on the stored food.

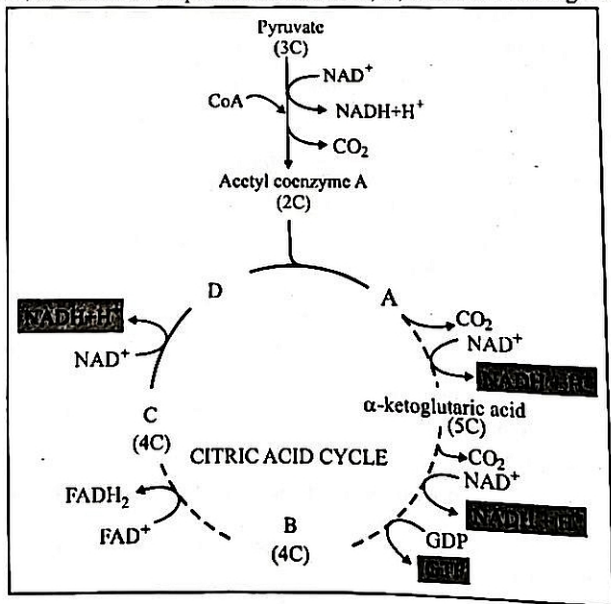
- (a) Which are they? 1½  
(b) Write the name of stored food present in them. 1½

17. (a) What is aestivation? 2  
(b) Write the name of aestivation marked as A, B, C and D in the given diagram. 1



18. (a) Which are the two types of cells that participate in  $C_4$  pathway? (Hatch and Slack pathway) 1  
(b) What is the name of the first  $C_4$  acid formed in this pathway? 1  
(c) Write two examples of  $C_4$  plants. 1

19. Observe the figure of Citric acid cycle.  
(a) Where does it take place in a cell? 1  
(b) Write the name of compounds marked as A, B, C and D in the figure. 2



**PART - B**  
**ZOOLOGY**

(Maximum : 30 Scores)

Time : 1 Hour

(3 × 1 = 3)

**I. Answer any 3 questions from 1 to 5. Each carries 1 score.**

1. The system of providing scientific name with two components is called \_\_\_\_\_.
2. Water vascular system is present in \_\_\_\_\_.  
(a) Leech (b) Neries  
(c) Prawn (d) Starfish
3. Name the nucleotide form of guanine.
4. The functional unit of a muscle contraction is called \_\_\_\_\_.
5. Erythro poietin, a peptide hormone produced by \_\_\_\_\_.

**II. Answer any 9 questions from 6 to 16. Each carries 2 scores.**

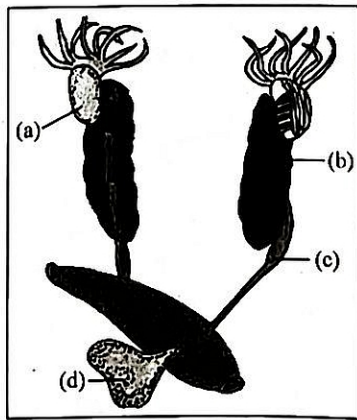
(9 × 2 = 18)

6. Classify the following into polypeptides and polysaccharides :  
(Trypsin, Inulin, Insulin, Chitin)

7. Observe the diagram of male reproductive system of Frog.

Label a, b, c, d

(½ × 4)



8. Give reason :
- (a) AB blood group individuals are called universal recipients. 1
  - (b) SAN is called pacemaker of heart. 1
9. When substrate concentration increases, the velocity of enzymatic reaction rises at first. After attaining maximum velocity, it is not exceeded by any further rise in concentration of the substrate. Why ?
10. Distinguish between :
- (a) Systole and Diastole 1
  - (b) Plasma and Serum 1
11. Indicate whether the following statements are true or false :
- (a) Reptiles are ammonotelic animals.
  - (b) Lungs and liver also help in the elimination of excretory wastes.
  - (c) Inflammation of glomeruli of kidney is called renal calculi.
  - (d) Malpighian Tubules are the excretory structures of most of the insects including cockroaches. ( $\frac{1}{2} \times 4$ )
12. Henle's loop plays an important role in concentrating the urine. How ?
13. Name the joint :
- (a) The joint between adjacent vertebrae
  - (b) Joint between skull bones
  - (c) Joint between atlas and axis
  - (d) Joint between carpal and metacarpal of thumb ( $\frac{1}{2} \times 4$ )

14. Which hormonal deficiency is responsible for the following ?

- (a) Diabetes insipidus                      (b) Cretinism  
(c) Diabetes mellitus                      (d) Dwarfism

( $\frac{1}{2} \times 4$ )

15. Give one word :

- (a) Warm blooded animals  
(b) The body surface is distinctly marked out into segments  
(c) The property of a living organism to emit light  
(d) Sexes are not separate

( $\frac{1}{2} \times 4$ )

16. Match the following :

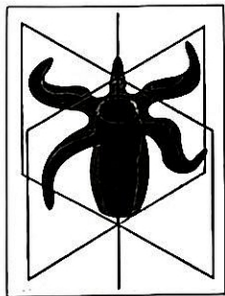
- (a) Radula                      - Sycon  
(b) Pinnae                      - Hydra  
(c) Osculum                      - Equus  
(d) Hypostome                      - Loligo

( $\frac{1}{2} \times 4$ )

III. Answer any 3 questions from 17 to 20. Each carries 3 scores.

( $3 \times 3 = 9$ )

17. Observe the diagram. Answer the following :



- (a) Identify the symmetry.  
(b) State any two phylum in which this condition can be seen.

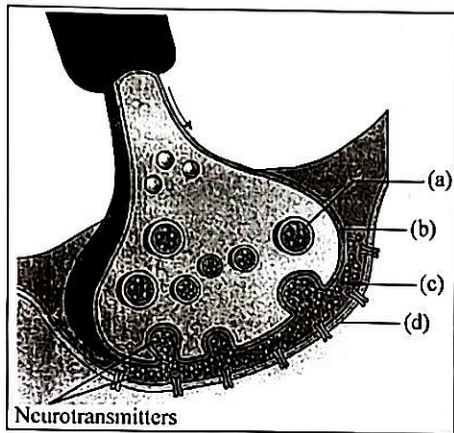
1

2



18. "The functioning of the kidneys is effectively monitored and regulated by hormonal feedback mechanism involving the hypothalamus, JGA and to a certain extent heart."  
Explain the role of JGA in the regulation of kidney function.

19. Observe the diagram. Answer the question.



Label

- (a)  
(b)  
(c)  
(d)
- (e) Name different types of synapses. ( $\frac{1}{2} \times 4$ )
- (1)
20. Define :
- (a) Tidal volume (1)  
(b) Residual volume (1)  
(c) Vital capacity (1)