Reg. No. : .....

Name : .....

FY 26

FIRST YEAR HIGHER SECONDARY MODEL EXAMINATION, FEBRUARY 2023

Part – III

BIOLOGY

(Part – A Botany and Part – B Zoology)

Maximum : 60 Scores

Time : 2 Hours

Cool-off Time : 15 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.*
- *Write answer to the specific number of questions as instructed.*
- *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 തുടങ്ങുന്നതിന് മുമ്പ് 10 മിനിറ്റ് തയ്യാറെടുപ്പുകൾ നടത്തുന്നതിനായി നൽകുന്നതാണ്.
- 'കൂൾ ഓഫ് ടൈം' ചോദ്യങ്ങൾ പരിചയപ്പെടാനും ഉത്തരങ്ങൾ ആസൂത്രണം ചെയ്യാനും ഉപയോഗിക്കുക.
- ഉത്തരങ്ങൾ എഴുതുന്നതിന് മുമ്പ് ചോദ്യങ്ങൾ ശ്രദ്ധാപൂർവ്വം വായിക്കണം.
- എല്ലാ വിഭാഗത്തിലും നിർദ്ദേശിക്കപ്പെട്ട എണ്ണം ചോദ്യങ്ങൾക്ക് മാത്രമേ ഉത്തരം എഴുതേണ്ടതുള്ളൂ.
- 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

Score

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

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

Mushroom : Agaricus

Bread mould : _____

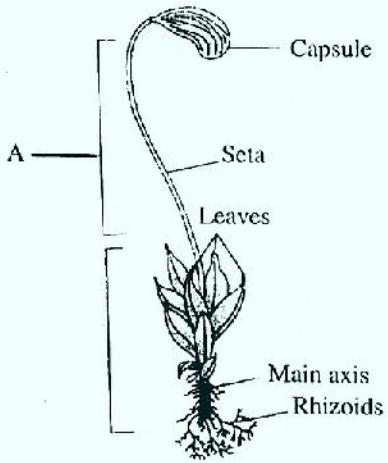
Fill in the blank.

2) All the tissues on the inner side of endodermis together constitute _____

3) Complete oxidation of organic substance in the presence of oxygen is _____

4) Observe the figure given below.

It shows two phases in the life cycle of Funaria. Identify and write the phase marked as 'A'.



5) Name the enzyme present in plants which shows carboxylation and oxygenation activity.

Score

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

6) Diatoms, the chief producers in the ocean are useful in many ways. Evaluate the statement.

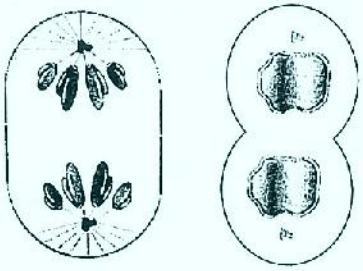
7) An important model of the structure of plasma membrane was proposed by Singer and Nicolson.

   a) What is this model called ?

   b) Which component forms bilayer ?

   c) Identify and write the two types of proteins present in plasma membrane.

8) Observe the following phases of nuclear divisions during mitosis and answer the following questions.



A B

   a) Name the two phases 'A' and 'B'.

   b) What are the main events occurring in 'A' phase ?

9) Give the scientific term for the following.

   a) Pairing of homologous chromosomes.

   b) Exchange of genetic material between two homologous chromosomes.

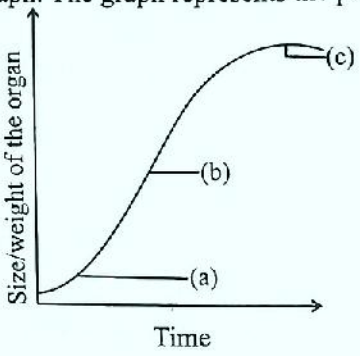
10) Match the following :

A	B
Prothallus	Mosses
Coralloid roots	Gametophyte
Floridean starch	Cycas
Protonema	Red algae

Score

11) Rough Endoplasmic Reticulum (RER) and Smooth Endoplasmic Reticulum (SER) are morphologically and functionally different. Justify this statement.

12) Observe the given graph. The graph represents the phases of growth.

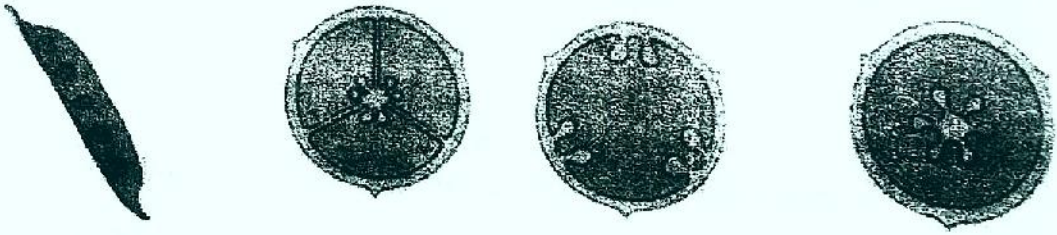


a) Name the growth curve.

b) Name the different phases of growth represented as (a), (b) and (c).

13) Fermentation is the incomplete oxidation of pyruvic acid. Find the difference between two types of fermentation in micro-organisms.

14) Observe the following diagram a, b, c, d and identify the placentation.



(a) (b) (c) (d)

15) Choose the appropriate function from the bracket and fill the blank against each plant hormone in the table.

(Ripening of fruits, Increase the length of stem in sugarcane, Induce parthenocarpy, Helps to overcome apical dominance)

Plant hormone	Function of hormone
Auxin	
Gibberellins	
Cytokinin	
Ethylene	

Score

16) a) Which is the special leaf anatomy seen in C_4 plants ?

b) Productivity and yield are better in C_4 plants than C_3 plants. Why ?

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

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

i) Exarch xylem
ii) Presence of hypodermis
iii) Palisade parenchyma
iv) Conjoint and open vascular bundle
v) Endodermis with casparian strips
vi) Large empty bulliform cells

Stem	Root	Leaf

18) Observe the figure 'A' and 'B' and answer the questions.

A B

a) Define venation.

b) Name and explain the type of venation in 'A' and 'B'.

19) Photophosphorylation takes place during photosynthesis.

a) Name the two types of photophosphorylations.

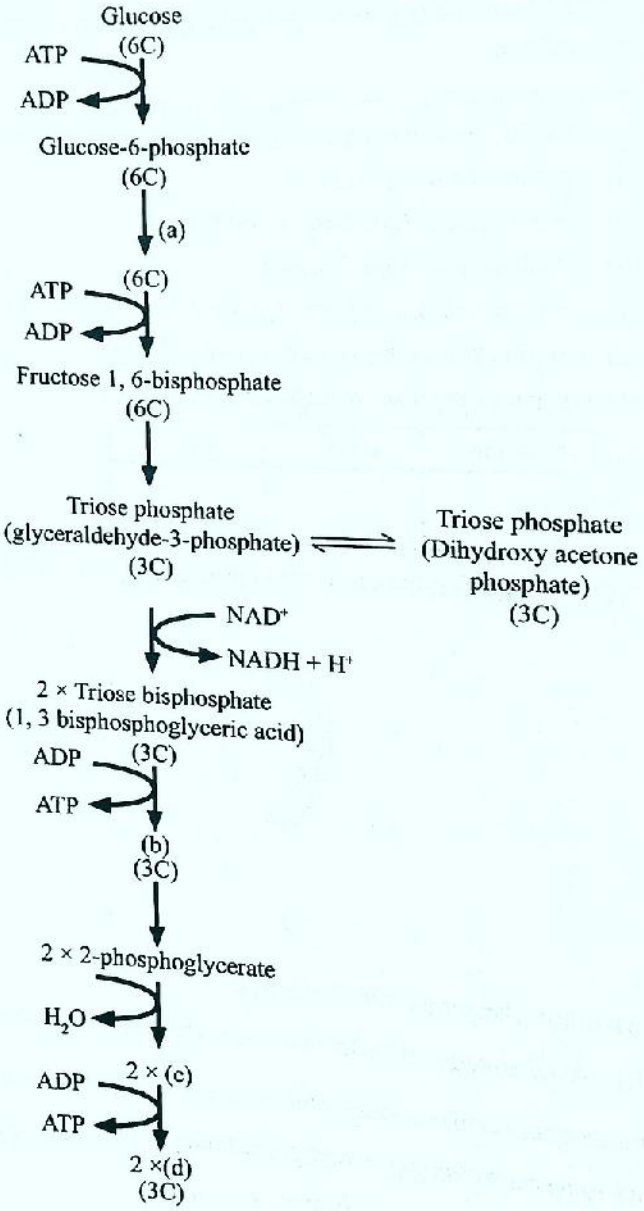
b) Mention the differences between them.

Score

20) Glycolysis is the partial oxidation of glucose to produce 2 molecules of pyruvic acid

a) Where does glycolysis occur ?

b) Steps of glycolysis are given below. Write the name of compounds marked as (a), (b), (c) and (d).



PART – B
ZOOLOGY

Maximum : 30 Scores

Time : 1 Hour

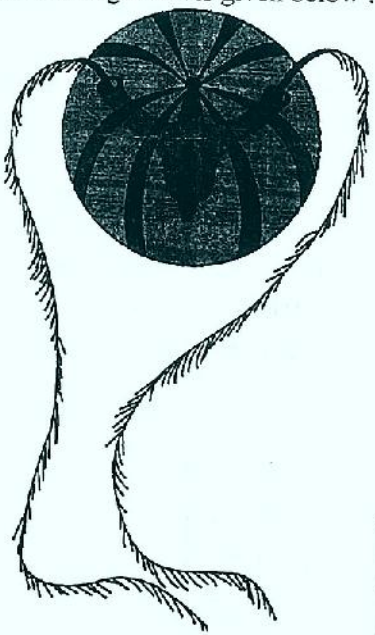
Score

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

1) Which among the following is secreted by pineal gland ?
   a) Prolactin b) Melatonin c) Gastrin d) Secretin
2) _____ is a difficulty in breathing causing wheezing due to inflammation of bronchi and bronchioles.
3) Name the most abundant protein in the animal world.
4) Man : Homo sapiens ; Housefly : _____
5) Inflammation of glomeruli of kidney is _____

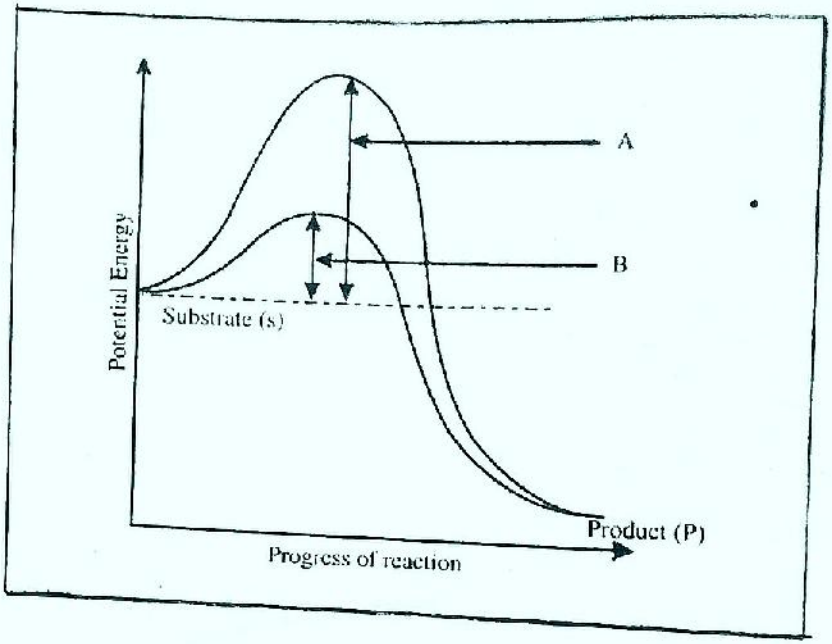
II. Answer any nine questions from 6 to 16. Each carries 2 scores. (9×2=18)

6) Name the following :
   a) Plasma without clotting factor.
   b) Blood group known as 'Universal recepients'.
   c) Protective double walled membranous bag covering human heart.
   d) Pacemaker of human heart.
7) Diagram of an invertebrate organism is given below :



   a) Identify the organism.
   b) Name the phylum to which it belongs.
   c) Write any two characteristics of the phylum.

8) Observe the graph given below regarding the concept of activation energy.



a) What is 'A' and 'B' ?

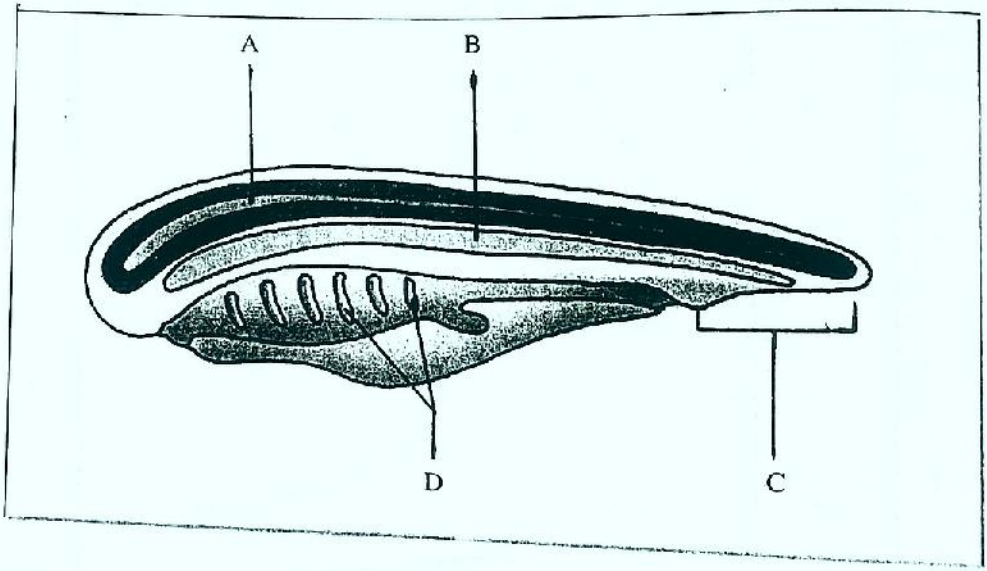
b) Mention the role of enzyme in the progress of biochemical reaction.

9) Expand the following :

a) ACTH b) FSH

c) TSH d) ADH

10) Figure showing fundamental characteristics of phylum chordata is given below. Name the parts labelled A, B, C and D.



11) Distinguish between :

a) IRV and ERV

b) TV and RV

12) Arrange the following animals under suitable headings in the table given below based on their mode of nitrogenous waste excretion.

Bony fishes, Birds, Terrestrial Amphibians, Mammals

Ammonotelic	Ureotelic	Uricotelic

Score

13) Match Column 'A' with 'B'.

A	B
a) Proboscis	i) Pila
b) Malpighian tubules	ii) Balanoglossus
c) Radula	iii) Sycon
d) Choanocytes	iv) Silkworm

14) Details regarding the disorders of human muscular and skeletal system is given below. Name the disorder.

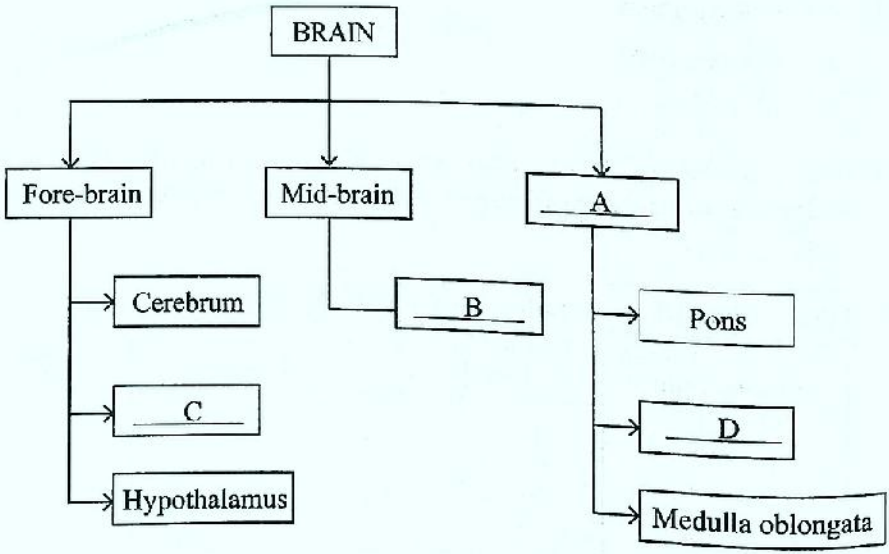
a) Inflammation of joints due to accumulation of uric acid crystals.

b) Inflammation of joints.

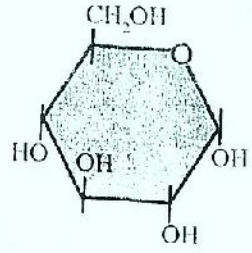
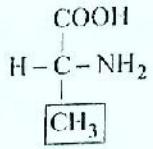
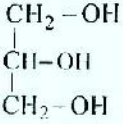
c) Rapid spasms in muscle due to low Ca^{++} in body fluids.

d) Age related disorder characterised by decreased bone mass and increased chances of fractures.

15) Complete the flow chart showing the parts of human brain.

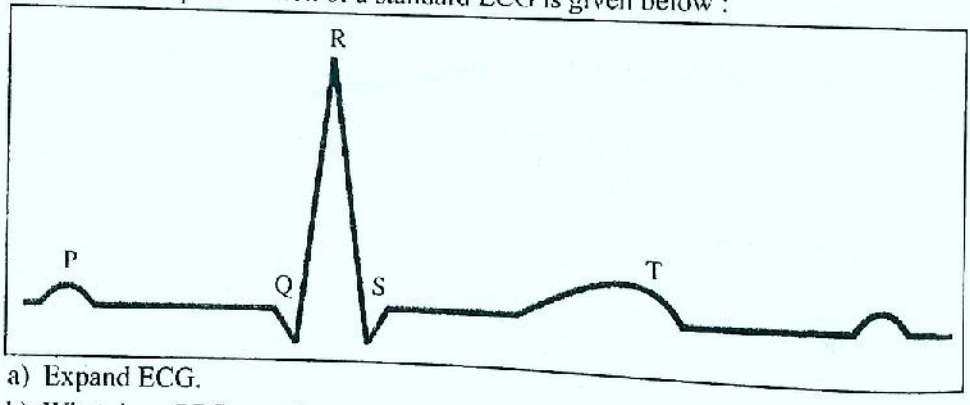


16) Molecular structure of some organic compounds found in living tissues are given below. Identify and write its name.

(a) 	(b) 
(c) $CH_3-(CH_2)_4-COOH$	(d) 

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

17) Diagrammatic presentation of a standard ECG is given below :



a) Expand ECG.

b) What does QRS complex wave denotes ?

c) Mention the clinical significance of ECG.

18) Based on the characteristics given below, identify and write the phylum with one example for each.

i) Presence of cnidoblasts or cnidocytes on the tentacles and the body.

ii) Body consist of a distinct head, muscular foot and visceral hump.

iii) Presence of jointed appendages.

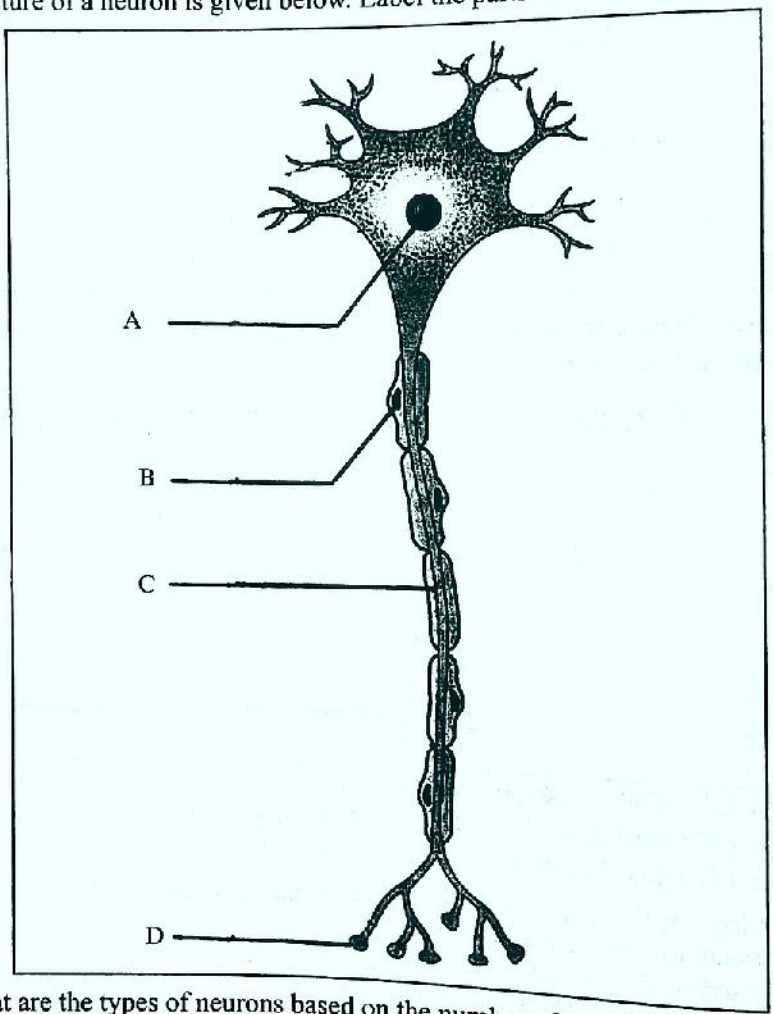
iv) Presence of flame cells.

Score

19) a) Give reason for the following :
   i) Pituitary dwarfism
   ii) Diabetes mellitus
   iii) Acromegaly
   iv) Diabetes insipidus

   b) Name the hormones known as "Emergency Hormones" and the gland secreting it.

20) a) Structure of a neuron is given below. Label the parts marked A, B, C and D.



   b) What are the types of neurons based on the number of axon and dendrites ?