



Reg. No. :

Name :

**FIRST YEAR HIGHER SECONDARY MODEL
EXAMINATION, FEBRUARY 2024**

**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 ബോട്ടനി 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

(3×1=3)

I. Answer any three questions from 1 – 4. Each carries 1 score.

- 1) Pattern of arrangement of leaves on the stem or branch called _____
- 2) Which of the following is not related with light-reaction ?
 - a) Light absorption
 - b) Water splitting
 - c) Biosynthesis of glucose
- 3) Coloured plastids : chromoplast
Colourless plastids : _____
- 4) Asexual reproduction in liverworts takes place by the formation of specialised structures called _____
 - a) Gemmae
 - b) Protonema
 - c) Prothallus

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

(9×2=18)

- 5) a) What are plant growth promoters ? (1)
b) Write two examples. (1)
- 6) a) What are respiratory substrate ? (1)
b) Name the most common respiratory substrate. (1)



Score

- 7) a) Which plant group is known as amphibians of plant kingdom ? (1)
b) Give reasons. (1)
- 8) a) Write the name of simple gaseous plant growth regulator. (1)
b) What is meant by respiratory climactic ? (1)
- 9) a) What is quiescent stage (G_0) in cell cycle ? (1)
b) What is the most important event takes place in 'S' phase ? (1)
- 10) Cell wall deposits of diatoms are called diatomaceous earth. Write any two uses of it.
- 11) a) Define Blackman's Law of Limiting Factors. (1)
b) Internal factors which affect rate of photosynthesis ? (1)
- 12) Write the differences between Metaphase stage and Anaphase stage of mitosis.
- 13) Some anatomical features of stem and root are given below
Arrange them in appropriate columns
- Radial vascular bundle
Endarch Xylem
Conjoint vascular bundle
Exarch Xylem
- | STEM | ROOT |
|------|------|
| | |
- 14) a) What is photorespiration ? (1)
b) Photorespiration not occur in C_4 plants why ? (1)



15) What is meant by :

a) Open Vascular bundle.

(1)

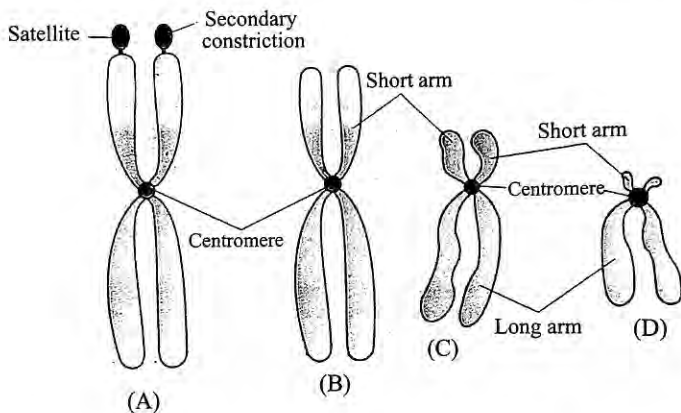
b) Closed Vascular bundle.

(1)

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

(3×3=9)

16) Given diagram shows different types of chromosomes. Observe the diagram and answer the following questions.



a) Identify four types of chromosomes based on the position of centromere observed in figures

(2)

A, B, C, D

b) What is Satellite ?

(1)

17) a) What is meant by respiratory quotient ?

(2)

b) How much is the RQ of carbohydrates which are used as substrate ?

(1)

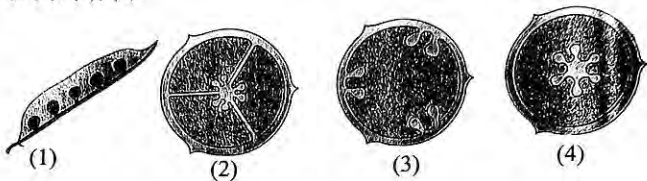
18) Observe the given diagram and answer the questions.

a) What is placentation ?

(1)

b) Write the type of placentation observed in figures (1), (2), (3), (4).

(2)



19) Some features of light reaction and dark reaction of photosynthesis given below :

Arrange them in corresponding columns.

- Biosynthetic phase
- Photochemical phase
- ATP and NADPH are utilized
- Take place in stroma
- ATP and NADPH are produced
- Take place in grana

Light reaction	Dark reaction

PART - B
ZOOLOGY
Maximum : 30 Scores

Time : 1 Hour
Score

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

(3×1=3)

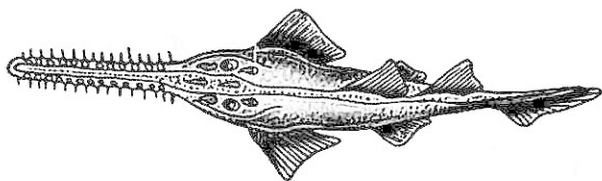
- 1) Binomial nomenclature was proposed by _____
- 2) A limb less amphibian is _____
- 3) Enzymes that catalyse removal of groups from substrates by mechanisms other than hydrolysis leaving double bonds are called _____
- 4) After ovulation the ruptured ovarian follicle is converted into a structure called _____
- 5) Rapid spasms in muscle due to low Ca^{++} in body fluid is _____

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

(9×2=18)

- 6) Note the relationship between first two words and find suitable word for the fourth place.
- A) Collar cell : Porifera ; Cnido blast : _____
 - B) Cycloid scales : Osteichthyes ; Placoid scales : _____
 - C) Annelida : Coelom ; Platyhelminthes : _____
 - D) Parapodia : Annelida ; Radula : _____

- 7) Observe the figure of the organism given below and answer the questions.



- a) Identify the organism. (½)
- b) Name the class to which it belongs. (½)
- c) Write any two salient features of the class. (1)
- 8) "All vertebrates are chordates but all chordates are not vertebrates". Do you agree with this statement ? Substantiate.
- 9) a) What are Co-factors ? (1)
- b) Write about any two types of Co-factors. (1)

10) Classify the following animals based on the type of N_2 waste they excrete.

Birds	Bony fishes
Reptiles	Aquatic amphibians

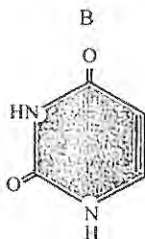
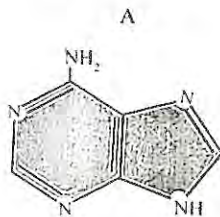
11) Identify the following :

a) Nitrogen bases 'A' and 'B'.

(1)

b) Write the nucleosides of these nitrogen bases.

(1)



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

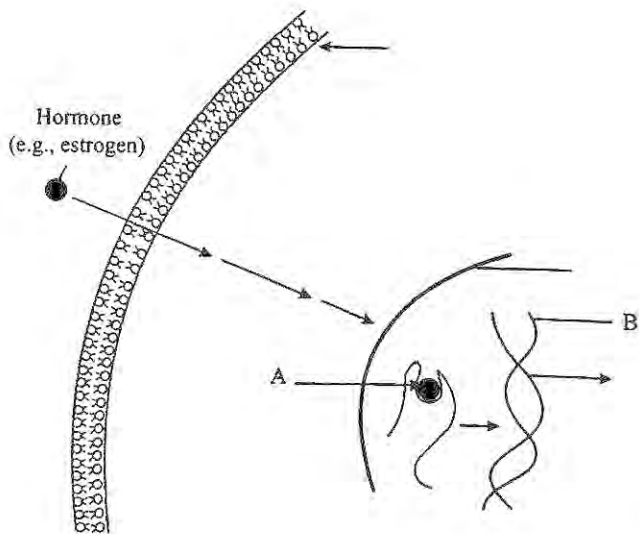
(Bundle of His, Ventricles, Purkinje fibers, AV node)

SA node →

15) Diagrammatic representation of the mechanism of hormone action is given below :

a) What does A and B in the diagram represent ?

b) Name any two steroid hormones.





Score

16) "Frogs are Ureotelic animals".

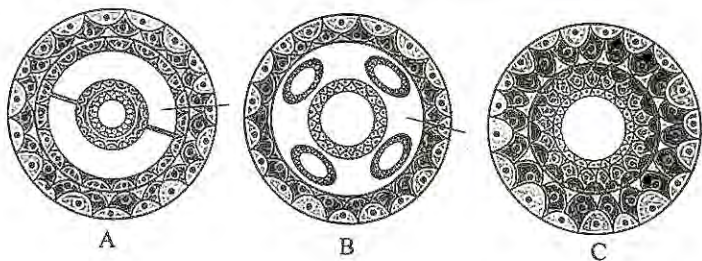
a) Do you agree ? Give reason.

b) Distinguish between aestivation and hibernation'.

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

(3×3=9)

17) Observe the diagram and answer the following questions.



i) Which diagram represents coelomate condition ?

(1)

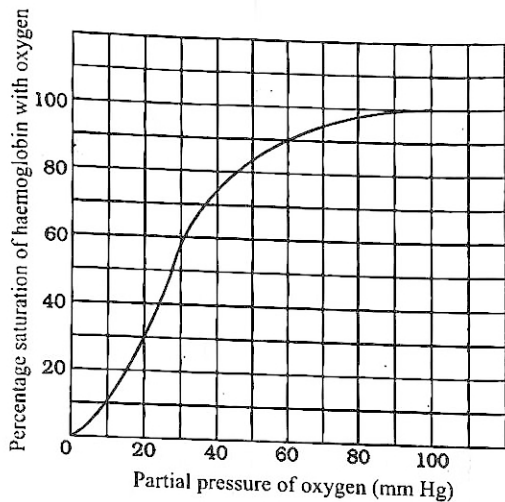
ii) Name one phylum having pseudocoelomate condition.

(1)

iii) Write one example for acoelomate animal.

(1)

- 18) Observe the graph shown below and answer the questions.



- a) Identify the graph. (1)
- b) Write any two factors that affect this. (1)
- c) Write the significance of this graph. (1)
- 19) Explain the three steps in urine formation.
- 20) a) Name the different layers of cranial meninges. (1½)
- b) Write the function of the following : (1½)
- A) $\text{Na}^+ - \text{K}^+$ pump
- B) Hypothalamus
- C) Medulla.