PUDUKKOTTAI.

HALF YEARLY EXAMINATION - 2023 | **Exam No.**

Time : 3.00 Hours | **XI - BIOLOGY** | *Marks : 70*

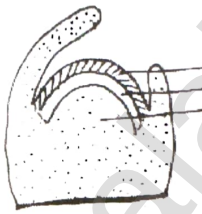
Note : *Candidate should answer Part-I (Bio-Botany) & Part-II (Bio-zoology) in separate answer-books.*

(PART - I) BIO - BOTANY (Marks:35)

SECTION - I

Note: 1) Answer all the questions.
2) Choose the most appropriate answer from the given four alternatives and write the option code and the corresponding answer. ***(8x1=8)***

1. Select the fungus which produces the toxin aflatoxin
   a) tophrina deformans b) albugo candida
   c) aspergillus flavus d) aspergillus fumigatus
2. In which plant photosynthetic roots are found
   a) cuscuta b) viscum c) dendrophtoe d) tinospora
3. Phylogenetic classification is the most favoured classification because it reflects
   a) comparative anatomy b) number of flowers produced
   c) comparative cytology d) evolutionary relationships
4. The correct sequence of cell cycle is
   a) S-M-G_1-G_2 b) S-G_1-G_2-M c) G_1-S-G_2-M d) M-G_1-G_2-S
5. ***Refer to the given figure and select the correct statement***



   i) A, B and C are histogen of shoot apex
   ii) A gives rise to medullary rays
   iii) B gives rise to cortex
   iv) C gives rise to epidermis
   a) i and ii only b) ii and iii only
   c) i and iii only d) iii and iv only
6. Which among the following is correct?
   i) Apoplast is fastest and operate in nonliving part
   ii) Transmembrane route includes vacuole
   iii) Symplast interconnect the nearby cell through plasmadesmata
   iv) Symplast and transmembrane route are in living part of the cell
   a) i and ii b) ii and iii
   c) iii and iv d) i, ii, iii and iv
7. The correct sequence of flow of electrons in the light reactions is
   a) PSII, Plastoquinone, Cytochrome, PSI, Ferredoxin
   b) PSI, Plastoquinone, Cytochrome, PSII, Ferredoxin
   c) PSII, Ferredoxin, Plastoquinone, Cytochrome, PSI
   d) PSII, Plastoquinone, Cytochrome, PSI, Ferredoxin
8. Which one is called as gaseous phytohormone?
   a)Ethylene b) Cytokinins c) ABA d) Auxin

SECTION - II

Note: Answer any four of the following questions. ***(4x2=8)***

9. Define: Eustete.
10. Define: syngenesious androecium.
11. Write the types of chromosome based on the position of centromere.
12. In which season the vessels of angiosperms are larger in size. Why?
13. What is "Rochmond Lang Effect"?
14. Write any two properties of water.

SECTION - III

Note: Answer any three questions. Question No.19 is compulsory. ***(3x3=9)***

15. Write any three distinguishing features of monera.
16. Compare sympodial branching with monopodial branching.
17. Write a short note on papilionaceous corolla.
18. Write any three significance of Mitosis.
19. A tree is believed to be releasing oxygen during night time. Do you believe the truthfulness of this statement? Justify your answer by giving reasons.

SECTION - IV

Note: Answer the following questions. ***(2x5=10)***

20. a) Differentiate between Gymnosperm and Angiosperm. ***(OR)***
    b) What are the uses of Herbarium.
21. a) Write the diagramatic sketch of Glycolisis. ***(OR)***
    b) Explain any four types of vascular bundles with diagrams.

(PART - II) BIO - ZOOLOGY (Marks:35)

SECTION - I

Note : 1) Answer all the questions. ***(8x1=8)***

2) Choose the most appropriate answer from the given four alternatives and write the option code and the corresponding answer.

1. Cladogram considers the following characters
   a) physiological and biochemical
   b) Evolutionary and phylogenetic
   c) taxonimic and systematic
   d) none of the above
2. Exoskeleton of which phylum consists of chtinous cuticle?
   a) Annelida
   b) Porifera
   c) Arthropoda
   d) Echinodermata
3. Non-shivering thermognesis neonates produces heat through
   a) white fat
   b) brown fat
   c) yellow fat
   d) colourless fat
4. Which of the following hormones stimulate the production of pancreatic juice and bicarbonate?
   a) angiotensin anel epinephrine
   b) gastrin and insulin
   c) cholecystokinin and secretin
   d) insulin and glucagon
5. Which one of the following plasma proteins is involved in the congulation of blood?
   a) globulin
   b) fibrinogen
   c) albumin
   d) serum amylase
6. The functional unit of a muscle fibre is
   a) sarcomere
   b) sarcoplasm
   c) myosin
   d) actin
7. Which of the folloiwing gland is related with immunity?
   a) pineal gland
   b) adrenal gland
   c) thymus
   d) parathyroid gland
8. Isinglass is used in
   a) preparation of wines
   b) clearing of wines
   c) distillation of wines
   d) preservation of wines

SECTION - II

Note: Answer any four questions. ***(4x2=8)***

9. What are flame cell?
10. Why blood is considered as a typical connective tissue?
11. Bile juice contains no digestive enzymes yet it is important for digestion. Why?
12. Distinguish between open and closed circulation.
13. Name the three main hormones involved in the regualtion of the renal function?
14. How is tetany caused?

SECTION - III

Note: Answer any three questions. Question No.17 is compulsory. ***(3x3=9)***

15. Some epithelia are pseudo stratified what does this mean?
16. What might be the effect on a person whose diet has less iron content?
17. Draw the L.S. of human eye and label the parts.
18. Pineal gland is an endoerine gland. write its role.
19. Define cross breeding.

SECTION - IV

Note: Answer all the questions. ***(2x5=10)***

20. a) What are the various classical taxonomical tools? Explain.

(OR)

b) Explain the male reproductive system of frog.

21. a) Explain the mechanism of breathing in human.

(OR)

b) Explain the sliding-filament theory of muscle contraction.

HIGHER SECONDARY FIRST YEAR – PUDUKKOTTAI DIST.
HALF YEARLY EXAMINATION – 2023.
Scoring key

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SUBJECT: BIO - ZOOLOGY **CLASS: 11**

SECTION - I		8 x 1 = 8
Q. NO	**ANSWERS**	**MARK**
1	b) Evolutionary and phylogenetic	**1**
2	c) Arthropoda	**1**
3	b) brown fat	**1**
4	c) cholecystokinin and secretin	**1**
5	b) fibrinogen	**1**
6	a) sarcomere	**1**
7	c) thymus	**1**
8	b) clearing of wines	**1**

SECTION - II

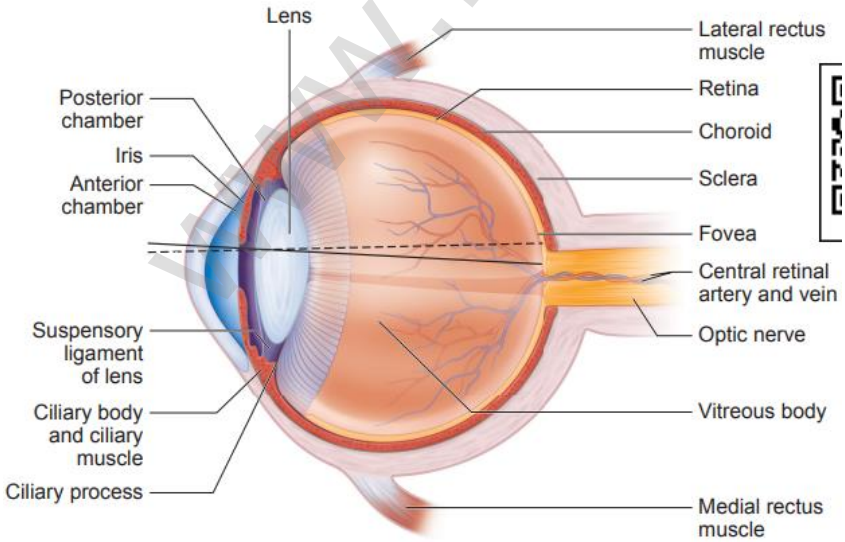
Answer any four of the following questions. (2 Marks) **4 x 2 = 8**

Q.NO	ANSWERS	MARKS
9	**What are flame cells?** 1. Flame cells are specialized excretory cells found in Phylum Platyhelminthes. 2. Flame cells help in osmoregulation and excretion	 **1** **1** **(Total-2)**
10	**Why blood is considered as a typical connective tissue?** **1.** Blood is the fluid connective tissue. **2.** Containing plasma red blood cells white blood cells and platelets. **3.** It functions as the transport medium for the cardiovascular system. **4.** Carrying nutrients wastes respiratory gases throughout the body.	 **½** **½** **½** **½** **(Total-2)**
11	**Bile juice contains no digestive enzymes yet it is important for digestion. Why?** **1.** Bile has no enzymes. **2.** Bile salts reduce the surface tension of fat droplets. **3.** Bile salts break fat droplets into small globules. **4.** Bile also activates lipases to digest lipids. **5.** Thus, the bile is very important for digestion.	 **½** **½** **½** **½** **(Total-2)**
12	**Distinguish between open and closed circulation.** **1. Open type:** Blood remains filled in tissue spaces due to the absence of blood capillaries. **2.** Ex: arthropods, molluscs, echinoderms, and urochordates **3. Closed type:** Blood is circulated through blood vessels of varying diameters (arteries, veins, and capillaries) **4.** Ex: Annelids, cephalochordates and vertebrates.	**½** **½** **½** **½** **(Total-2)**

13	**Name the three main hormones involved in the regulation of the renal function?** 1. Anti-Diuretic Hormone 2. Aldosterone 3. Atrial Natriuretic Hormone	**Any two** **1 + 1** **(Total-2)**
14	**How is tetany caused?** 1. Rapid muscle spasms in the muscles due to deficiency of parathyroid hormone. 2. Resulting in reduced calcium levels in the body.	**1** **1** **(Total-2)**

SECTION – III - ANSWER ANY THREE OF THE FOLLOWING QUESTIONS.

NOTE: Q.NO - 19 is Compulsory (3 MARKS) **6 x 3 = 18**

Q.NO	ANSWERS	MARKS
15	**Some epithelia are pseudo stratified what does this mean?** **1.** These cells are columnar but unequal in size. **2.** Though the epithelium is single – layered. **3.** it appears to be multi-layered because the nuclei lie at different levels in different cells.	**1** **1** **1** **(Total 3)**
16	**What might be the effect on a person whose diet has less-iron content?** 1. A person whose diet has less iron content will become anaemic. 2. The haemoglobin content of the blood will be less. 3. The volume of oxygen carried by RBCs gets reduced. 4. He / she may experience tiredness, weakness, fatigue etc. 5. In order to overcome this deficiency, one has to take iron - rich diet.	**Any three** **(Total 3)**
17	**Draw the L.S. of human eye and label the parts**  	**Diagram 2** **Labelling 1** **(Total 3)**

18	**Pineal gland is an endocrine gland, write its role** 1. In human, the pineal gland is located behind the third ventricle of brain. 2. It secretes the hormone, melatonin. **Functions:** 3. Regulation of circadian rhythm of our body. 4. Maintains the normal sleep wake cycle. **Other functions: (Any two)** **2 X ½ = 1** 5. The timing of sexual maturation of gonads. 6. Influences metabolism, pigmentation, menstrual cycle and defence mechanism of our body.	½ ½ ½ ½ 1 **(Total 3)**
19	**Define cross breeding.** 1. Breeding between a superior male of one breed with a superior female of another breed. 2. The cross-breed progeny has superior traits.	**2** **1** **(Total 3)**

SECTION - D (5 MARKS) **2 x 5 = 10**

Answer all the questions:

Q.NO	ANSWERS	MARKS
20. (a)	**a) What are the various classical taxonomical tools? Explain.** 1. **Taxonomical Keys**: Keys are based on comparative analysis of the similarities and dissimilarities of organisms. 2. **Museum**: Biological museums have collection of preserved plants and animals for study and ready reference. Specimens of both extinct and living organisms can be studied. 3. **Zoological parks**: These are places where wild animals are kept in protected environments under human care. It enables us to study their food habits and behaviour. 4. **Marine parks:** Marine organisms are maintained in protected environments. 5. **Printed taxonomical tools** consist of identification cards, description, field guides and manuals.	**1** **1** **1** **1** **1** **(Total-5)**
20. (b)	**b) Explain the male reproductive system of frog.** **<u>Male reproductive system of a frog:</u>** **6 X ½ = 3** 1. The **male** frog has a pair of testes. 2. Attached to the kidney and the dorsal body wall by folds of peritonium called mesorchium. 3. Vasa efferentia arise from each **testis**. 4. They enter the kidneys on both side and open into the bladder canal. 5. Finally, it communicates with the urinogenital duct, 6. That comes out of kidneys and opens into the cloaca.	**Description** **3 Mark**

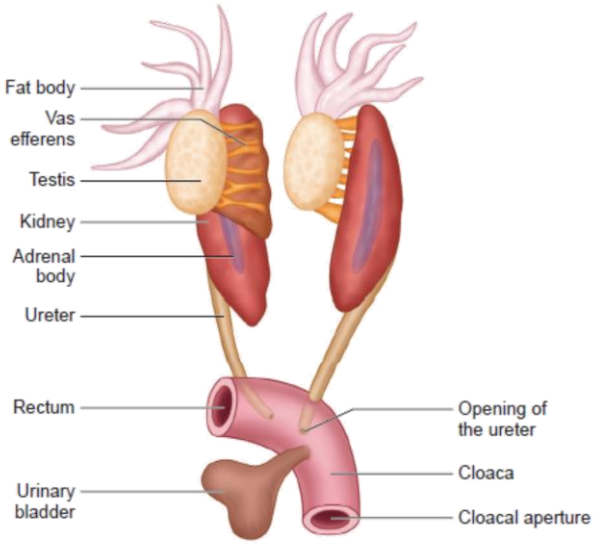


Diagram 2 mark

(Total-5)

21. (a)

a) Explain the mechanism of breathing in human.

1. **Ventilation or breathing:** The movement of air between the atmosphere and the lungs.
2. **Two phases of breathing:** Inspiration and expiration.
3. **Inspiration:** The movement of atmospheric air into the lungs.
4. **Expiration:** The movement of alveolar air that diffuse out of the lungs.

1

Inspiration:

1. Inspiration occurs if the pressure inside the lungs (intrapulmonary pressure) is less than the atmospheric pressure.
2. Inspiration is initiated by the contraction of the diaphragm muscles and external intercostal muscles, which pulls the ribs and sternum upwards and outwards.
3. It increases the volume of the thoracic chamber in the dorso ventral axis.
4. And forcing the lungs to expand the pulmonary volume.
5. The increase in pulmonary volume and decrease in the intrapulmonary pressure.
6. So, the fresh air from outside to enter the air passages into the lungs.

2

Expiration:

1. Expiration takes place when the pressure within the lungs is higher than the atmospheric pressure.
2. Relaxation of the diaphragm allows the diaphragm and sternum to return to its dome shape.
3. The internal intercostal muscles contract, pulling the ribs downward reducing the thoracic volume and pulmonary volume.
4. This results in an increase in the intrapulmonary pressure slightly above the atmospheric pressure.
5. Expulsion of air from the lungs.

2

(Total-5)

21. (b)	**b) Explain the sliding-filament theory of muscle contraction.** **<u>Sliding-filament theory:</u>** **1.** Andrew F.Huxley and Rolf Niedergerke proposed the sliding filament theory. **Muscle tension:** **1.** The contraction of muscle fibre is creating force to move or to resist a load. **2.** The force that is created by the contracting muscle is called muscle tension. **3.** Contraction is the creation of tension in the muscle. **4.** Relaxation is the release of tension. **Mechanism of muscle contraction:** **5.** Muscle contraction is initiated by a nerve impulse sent by the central nervous system (CNS) through a motor neuron. **<u>Neuromuscular junction:</u>** **6.** The junction between the motor neuron and sarcolemma of the muscle fibre is called the neuromuscular junction or motor end plate. **<u>Mechanism of conduction of nerve impulses:</u>** **<u>a) Binding of Ca^+ ions to the troponin and the formation of actomyosin.</u>** **1.** When nerve impulse reaches this neuromuscular junction, acetylcholine is released. **2.** This action potential travels along the T – tubules and triggers the release of calcium ions from the sarcoplasmic reticulum. **3.** The Ca+ ions bind to the troponin filaments. **4.** The tropomyosin uncovers the myosin binding site. **5.** Now the head of myosin form a cross bridge. **6.** Now this actin myosin complex is called actomyosin. **<u>b) Power stroke:</u>** **1.** Hydrolysis of ATP to release energy. **2.** It helps the myosin head to rotate and form a 90° angle. **3.** In this position myosin binds to an actin and activates contraction – relaxation cycle which is followed by a power stroke. **4.** Power stroke begins after the hinge region tilt from 90° angle to 45° angle of myosin. **5.** This causes the myosin head to swivel. **6.** This pulls the action filament towards the centre of the A band. **7.** The myosin returns back to the relaxed state and release ADP and phosphate. **8.** A new ATP binds to the myosin and the cross bridge is broken.	**½** **1** **½** **½** **1** **1**

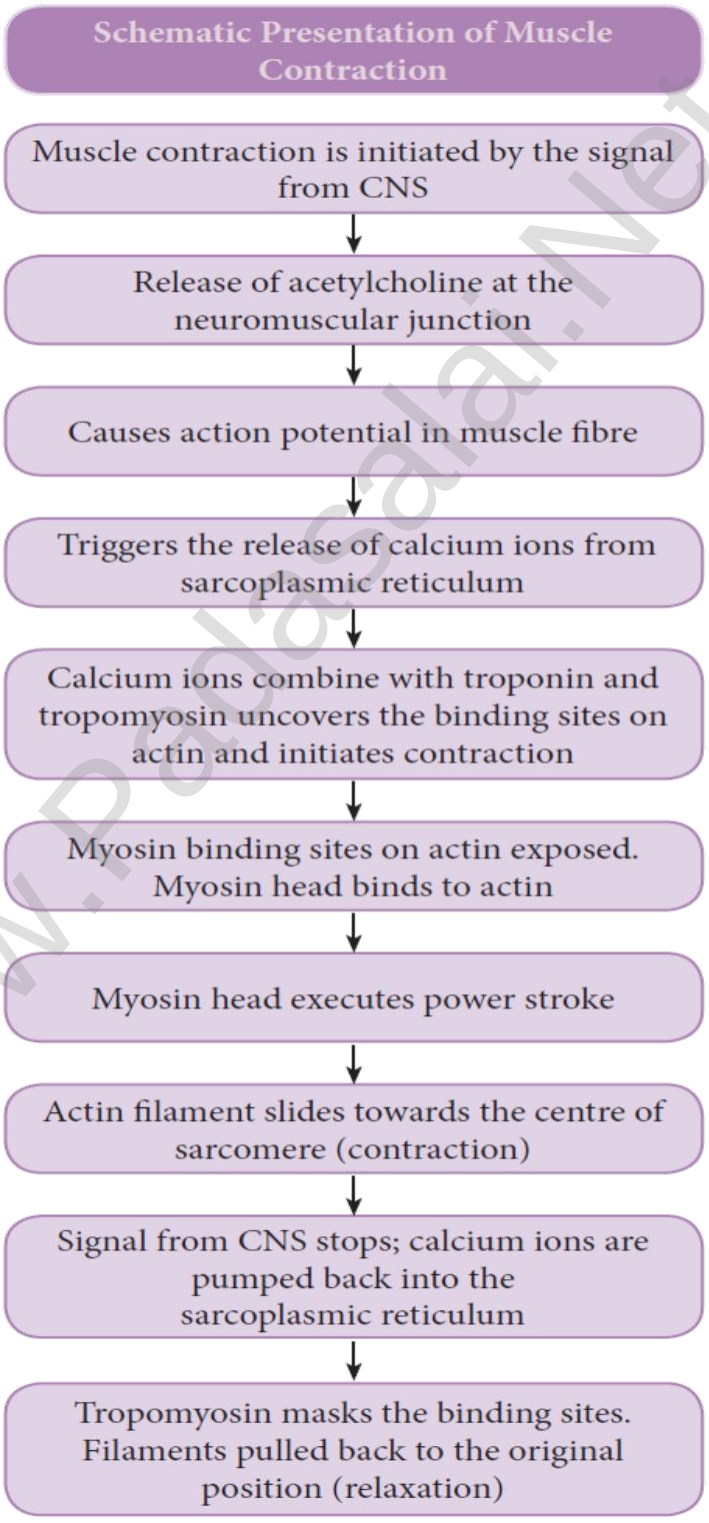
Relaxation:

- ✓ Motor impulses stop.
- ✓ Calcium ions are pumped back into sarcoplasm.
- ✓ Masking of active sites of actin filament by tropomyosin.
- ✓ The thin filaments assume their normal position and muscle is released.

½

(OR)

(Total-5)



½ ½ ½ ½ ½ ½ ½ ½ ½

5 Mark

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