

**QUARTERLY EXAMINATION - 2023****Exam No.****Time: 3-00 Hrs.****XI - BIOLOGY****Marks : 70****Note : Candidate should answer Part-I (Bio-Botany) & Part-II (Bio-zoology) in separate answer-books.****(PART - I) BIO - BOTANY****SECTION - I****Note: 1) Answer all the questions. 2) Choose the correct answer. (8x1=8)****1. Identify the correctly matched pair.**

- |                 |   |                 |
|-----------------|---|-----------------|
| a) Actinomycote | - | a) Late blight  |
| b) Mycoplasma   | - | b) Lumpy jaw    |
| c) Bacteria     | - | c) Crown gall   |
| d) Fungi        | - | d) Sandal spike |

**2. Match the columns and identify the correct option.****Column I**

- a) Thylakoids  
b) Cristae  
c) Cisternae  
d) Chromatin

**Column II**

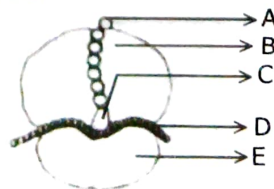
- i) Disc shaped sacs in Golgi apparatus  
ii) Condensed structure of DNA  
iii) Flat membranous sacs in stroma  
iv) Infoldings in Mitochondria

- |     |       |       |      |      |
|-----|-------|-------|------|------|
| (1) | (a)   | (b)   | (c)  | (d)  |
| (2) | (iii) | (iv)  | (ii) | (i)  |
| (3) | (iv)  | (iii) | (i)  | (ii) |
| (4) | (iii) | (iv)  | (i)  | (ii) |

3. Sequences of which of the following is used to know the phylogeny  
a) mRNA                      b) rRNA                      c) tRNA                      d) HnRNA
4. The haploid number of chromosome for an angiosperm is 14, the number of chromosome in its endosperm would be  
a) 7                              b) 14                              c) 42                              d) 28
5. Identify the correct sequences of the substages of prophase I of the Meiosis  
a) Zygotene, Diplotene, Diakinesis, Pachytene, Leptotene  
b) Leptotene, Zygotene, Pachytene, Diplotene, Diakinesis  
c) Leptotene, Pachytene, Zygotene, Diplotene, Diakinesis  
d) Leptotene, Zygotene, Pachytene, Diakinesis, Diplotene
6. **Select the mismatch pair.**  
a) Musa - Unicostate  
b) Lablab - Trifoliolate  
c) Acalypha - Leaf Mosaic  
d) Allamanda - Ternate Phyllotaxy
7. Vexillary aestivation is the characteristic of the family  
a) Fabaceae                      b) Asteraceae                      c) Solanaceae                      d) Brassicaceae
8. The Greek philosopher known as "Father of Botany" is  
a) Carl Linnaeus                      b) Theophrastus  
c) Simpson                              d) Gaspard Bauhin

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

9. Differentiate between homoiomerous and heteromerous lichens.
10. What is plectostele? Give example.
11. Find the floral formula for a Bisexual flower with bract, regular, pentamerous, distinct calyx and corolla, superior ovary without bracteole.
12. Write ANA series according to the APG classification.
13. Label any four parts of the following diagram.



14. Write any two significance of Mitosis.

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

15. Why do farmers plant leguminous crops in crop rotations / mixed cropping?
16. i) Draw the diagram of Plectostele and label the parts.  
ii) Draw the diagram of Actinostele and label the parts.
17. Compare sympodial branching with monopodial branching.
18. Write any three significance of the Herbarium.

19. Give the technical terms for the following.  
 a) A sterile stamen. b) Stamens are united in one bunch.  
 c) Stamens are attached to the petals.

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

20. a) Explain the Botanical description of Clitoria ternatea. **(OR)**  
 b) Steps involved in gram staining.  
 21. a) Differentiate between Gymnosperms and Angiosperms. **(OR)**  
 b) Explain the mode of distribution of placenta inside the ovary with examples.

**(PART - I) BIO - ZOOLOGY****SECTION - I****Note: 1) Answer all the questions. 2) Choose the correct answer. (8x1=8)**

1. A group of organisms having similar traits of rank is \_\_\_\_  
 a) Species b) Taxon c) Genus d) Family
2. The type of vision in cockroach is  
 a) Three dimensional b) Two dimensional  
 c) Mosaic d) Cockroach do not have vision
3. **Match and select the correct answer.**
- | Cells / Gland       | Secretions / Ducts     | P      | Q   | R  | S  |
|---------------------|------------------------|--------|-----|----|----|
| P. Parietal cells   | I. Stenson's duct      | a) III | II  | I  | IV |
| Q. Peptic cells     | II. Duct of Rivinis    | b) III | IV  | II | I  |
| R. Sublingual gland | III. Hydrochloric acid | c) III | I   | II | IV |
| S. Parotid gland    | IV. Gastric enzymes    | d) IV  | III | II | I  |
4. During inspiration, the diaphragm  
 a) Expands b) Contracts and flattens  
 c) Unchanged d) Relaxes to become dome-shaped
5. Human being belongs to the order  
 a) Mammalia b) Primata c) Hominidae d) Felidae
6. Metameric segmentation is the main feature of  
 a) Annelida b) Echinodermata c) Arthropoda d) Coelenterata
7. **Select the correct statements.**  
 I. Bilateral symmetry, an advantageous type of symmetry is found in triploblastic animals to seek food and to find mates.  
 II. In Cnidaria, the polyp is free swimming.  
 III. In Gastropods, Osphradium is present to test the purity of water.  
 IV. Cycloid, Ganoid and Ctenoid scales are found in chondrichthyes.  
 a) Only I, II and IV are correct b) Only II and III are correct  
 c) Only I and III are correct d) Only I, III and IV are correct
8. Prevention of substances from leaking across the tissue is provided by  
 a) Adhering junction b) Gap junction  
 c) Elastic junction d) Tight junction

**SECTION - II****Note: Answer very shortly to any 4 questions.****(4x2=8)**

9. What are the components of blood in frog.  
 10. Provide short notes on 'Brown fat'.  
 11. Write the respiratory organs of Arthropods.  
 12. Differentiate probiotics from pathogenic bacteria.  
 13. Villi are present in the intestine, but not in the stomach. Why?  
 14. What is lymph? Write its function.

**SECTION - III****Note: Answer shortly to any 3 questions. Question No.19 is compulsory. (3x3=9)**

15. What is clitellum? Write its function.  
 16. Differentiate Schizocoelomates from Enterocoelomates with examples.  
 17. Write the important characters of bony fishes.  
 18. List the conditions that favour the formation and dissociation of oxyhaemoglobin.  
 19. Apart from bile secretion, the liver perform several other functions. Justify this statement.

**SECTION - IV****Note: Answer in detail.****(2x5=10)**

20. a) Who proposed Three domain classification? Explain the Domain Archaea. **(OR)**  
 b) What is an epithelium? Enumerate the characterestic features of different epithelia.  
 21. a) Explain the male reproductive system of frog. **(OR)**  
 b) Describe the mechanism by which human heart beat is initiated and conducted.

**QUARTERLY EXAMINATION – 2023**  
**PUDUKKOTTAI – DISTRICT – SCORING KEY**  
**HIGHER SECONDARY FIRST YEAR**

**SUBJECT: BIO - ZOOLOGY**

**CLASS: 11**

**Section - I**

**8 x 1 = 8**

Q.NO	A - TYPE	Q.NO	B - TYPE
1	A Species	1	
2	C Mosaic	2	
3	B P – III, Q – IV, R – II, S - I	3	
4	B Constracts and flattens	4	
5	B Primata	5	
6	A Annelida	6	
7	C Only I and III are correct	7	
8	D Tight junction	8	

**Section – II**

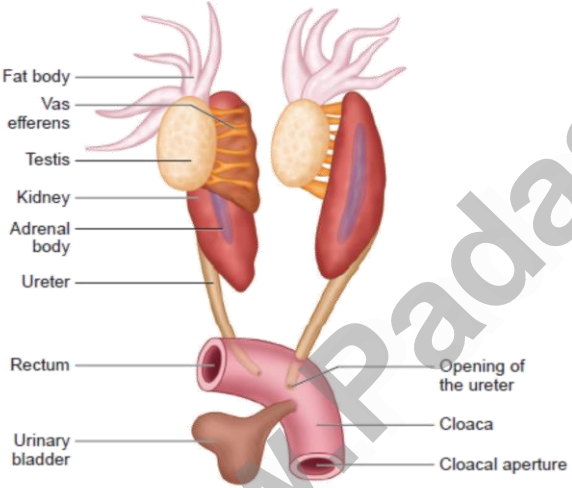
**Answer any four questions:**

**4 x 2 = 8**

<b>9</b>	<b>What are the components of blood in frog.</b>	<ol style="list-style-type: none"> <li>1. The blood of frog consists of plasma [60%] and blood cells [40 %].</li> <li>2. Cells: red blood cells, white blood cells, and platelets.</li> <li>3. RBCs are loaded with red pigment, nucleated and oval in shape.</li> <li>4. Leucocytes are nucleated, and circular in shape.</li> </ol>	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ <b>2 Mark</b>				
<b>10</b>	<b>Provide short notes on 'Brown fat'</b>	<ol style="list-style-type: none"> <li>1. Adipose tissue which contains abundant mitochondria.</li> <li>2. It is used to warm the bloodstream to warm the body.</li> <li>3. It produces heat by non-shivering thermogenesis.</li> </ol>	<b>1</b> $\frac{1}{2}$ $\frac{1}{2}$ <b>2 MARK</b>				
<b>11</b>	<b>Write the respiratory organs of Arthropods.</b>	<ol style="list-style-type: none"> <li>1. Gills,</li> <li>2. Book gills</li> <li>3. Book lungs</li> <li>4. Trachea</li> </ol>	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ <b>2 MARK</b>				
<b>12</b>	<b>Differentiate probiotics from pathogenic bacteria.</b>	<table border="1" style="width: 100%; border-collapse: collapse; margin-left: 20px;"> <thead> <tr> <th style="width: 50%;">Probiotic bacteria</th> <th style="width: 50%;">Pathogenic bacteria</th> </tr> </thead> <tbody> <tr> <td>Beneficial bacteria</td> <td>Disease-Causing bacteria</td> </tr> </tbody> </table>	Probiotic bacteria	Pathogenic bacteria	Beneficial bacteria	Disease-Causing bacteria	<b>1</b> <b>1</b> <b>2 MARK</b>
Probiotic bacteria	Pathogenic bacteria						
Beneficial bacteria	Disease-Causing bacteria						
<b>13</b>	<b>Villi are present in the intestine, but not in the stomach. Why?</b>	<ol style="list-style-type: none"> <li>1. The villi are the units of absorption consisting of the lacteal duct and blood capillaries.</li> <li>2. Digestion is completed only in the small intestine.</li> <li>3. So maximum absorption takes place through villi in the small intestine.</li> <li>4. In the stomach digestion is incomplete.</li> </ol>	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ <b>2 Mark</b>				

14	<p><b>What is lymph? Write its function</b></p> <p>1. The fluid inside the lymphatics is called lymph.</p> <p><b>Any two functions:</b></p> <p>2. Fats are absorbed through lymph in the lacteals present in the villi of the intestinal wall</p> <p>3. It helps in transporting nutrients hormones oxygen within the body cells.</p> <p>4. It keeps the body cells moist.</p>	<p>1</p> <p><math>2 \times \frac{1}{2} = 1</math></p> <p><math>\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p> <p><b>2 MARK</b></p>
<p><b>Section – III</b></p> <p><b>Answer any three questions. Question No – 19. Is Compulsory</b> <span style="float: right;"><b>3 X 3 = 9</b></span></p>		
15	<p><b>What is clitellum? Write its function.</b></p> <p>1. In mature Earthworms, segments 14 to 17 may be found swollen with a glandular thickening of the skin called the <b>clitellum</b>.</p> <p>2. This helps in the formation of the cocoon.</p>	<p>1 <math>\frac{1}{2}</math></p> <p>1 <math>\frac{1}{2}</math></p> <p><b>3 MARK</b></p>
16	<p><b>Differentiate Schizocoelomates from Enterocoelomates with examples.</b></p> <p><b>Schizocoelomates:</b></p> <p>1. Animals the body cavity is formed by splitting of mesoderm.</p> <p>2. E.g., annelids, arthropods, molluscs.</p> <p><b>Enterocoelomates:</b></p> <p>3. Animals the body cavity is formed from the mesodermal pouches of archenteron.</p> <p>4. e.g., Echinoderms, hemichordates and chordates.</p>	<p>1</p> <p><math>\frac{1}{2}</math></p> <p>1</p> <p><math>\frac{1}{2}</math></p> <p><b>3 MARK</b></p>
17	<p><b>Write the important characters of bony fishes.</b> <span style="float: right;"><b>Any 3 (3 X 1 = 3)</b></span></p> <p>1. It includes both marine and freshwater fishes</p> <p>2. Presence of bony endoskeleton and spindle shaped body.</p> <p>3. <b>Scales:</b> Ganoid, cycloid or ctenoid scales.</p> <p>4. <b>Respiration:</b> Four pairs of filamentous gills and is covered by an operculum.</p> <p>5. <b>Air bladder:</b> Present - It helps in gaseous exchange and Maintaining buoyancy in most of the ray finned fishes.</p> <p>6. <b>Excretory organs:</b> Mesonephric kidneys - Ammonotelic.</p> <p>7. Presence of well developed lateral line sense organ.</p>	<p><b>3 MARK</b></p>
18	<p><b>List the conditions that favour the formation and dissociation of oxyhaemoglobin.</b></p> <p><b>In the alveoli:</b></p> <p>1. High pO<sub>2</sub>, low pCO<sub>2</sub>, low temperature and less H<sup>+</sup> concentration, favours the formation of oxyhaemoglobin.</p> <p><b>In the tissues:</b></p> <p>2. Low pO<sub>2</sub>, high pCO<sub>2</sub>, high H<sup>+</sup> and high temperature favours the dissociation of oxygen from oxyhaemoglobin.</p>	<p>1 <math>\frac{1}{2}</math></p> <p>1 <math>\frac{1}{2}</math></p> <p><b>3 MARK</b></p>
19	<p><b>Apart from bile secretion, the liver perform several other functions. Any 3 (3 X 1 = 3)</b></p> <p>1. Destroys aging and defective blood cells</p> <p>2. Stores glucose in the form of glycogen or disperses glucose into the blood stream with the help of pancreatic hormones</p> <p>3. Stores fat soluble vitamins and iron</p> <p>4. Detoxifies toxic substances.</p> <p>5. Involves in the synthesis of non-essential amino acids and urea.</p>	<p><b>3 MARK</b></p>

<b>Section – IV</b>		<b>5 x 2 = 10</b>
<b>Answer all the questions:</b>		
<b>20 .A</b>	<p><b>Three Domain Classification:</b></p> <ol style="list-style-type: none"> <li>This classification was proposed by Carl Woese (1977) and his co-workers.</li> </ol> <p><b>Domain Archaea</b> <span style="float: right;"><b>Any Four (4 X 1 = 4)</b></span></p> <ol style="list-style-type: none"> <li>These are single celled organisms, ie., the prokaryotes.</li> <li><b>Extremophiles:</b> Have the ability to grow in extreme conditions like volcano vents, hot springs and polar ice caps.</li> <li>They are capable of synthesizing their food without sunlight and oxygen by utilizing hydrogen sulphide and other chemicals from the volcanic vents.</li> <li><b>Methanogens:</b> Produced methane</li> <li><b>Halophiles:</b> live in salty environments</li> <li><b>Thermoacidophiles:</b> live in acidic environments and at high temperatures.</li> </ol>	<p><b>1</b></p> <p><b>4</b></p> <p><b>5 Mark</b></p>
<b>OR</b>		
<b>20. B</b>	<p><b>Epithelial tissue is a sheet of cells that covers the body surface or lines the body cavity.</b></p> <p style="text-align: right;"><b>Any Four types (4 X1 = 4)</b></p> <p><b>Simple epithelium:</b></p> <ol style="list-style-type: none"> <li>It is composed of a single layer of cells.</li> <li>They are found in the organs of absorption, secretion and filtration.</li> </ol> <p><b>Squamous epithelium:</b></p> <ol style="list-style-type: none"> <li>Single thin layer of flattened cells. <span style="float: right;">- - - ½ Mark</span></li> <li>Location: kidney glomeruli, air sacs of lungs, lining of heart, blood vessels and lymphatic <span style="float: right;">- - - ½ Mark</span></li> <li>Function: Diffusion, filtration in sites <u>Protection is not important.</u></li> </ol> <p><b>Cuboidal epithelium:</b></p> <ol style="list-style-type: none"> <li>Single layer of cube like cells. <span style="float: right;">- - - ½ Mark</span></li> <li>Location: kidney tubules, ducts and secretory portions of small glands and surface of the ovary. <span style="float: right;">- - - ½ Mark</span></li> <li>Its main functions are secretion and absorption.</li> </ol> <p><b>Columnar epithelium:</b> <span style="float: right;">- - - ½ + ½ Mark</span></p> <ol style="list-style-type: none"> <li>Composed of single layer of tall cells with round to oval nuclei at the base.</li> <li>Location: It lines the digestive tract from the stomach to the rectum.</li> <li><b>Functions:</b> Absorption, secretion of mucus, enzymes and other substances</li> </ol> <p><b>Types: Modifications:</b></p> <ol style="list-style-type: none"> <li><b>Microvilli</b> on the apical surface of the absorptive cells and</li> <li><b>Goblet cell:</b> secretes the protective lubricating mucus.</li> </ol> <p><b>Types:</b></p> <ol style="list-style-type: none"> <li>Ciliated type: lines the small bronchioles, fallopian tubes and uterus.</li> <li>Non - ciliated type: lines most of the digestive tract, gall bladder and secretory ducts of glands.</li> </ol> <p><b>Pseudo-stratified epithelial</b></p> <ol style="list-style-type: none"> <li>Cells are columnar, but unequal in size. <span style="float: right;">- - - ½ Mark</span></li> <li>Although the epithelium is single layered yet it appears to be multi-layered because the nuclei lie at different levels in different cells. <span style="float: right;">- - - ½ Mark</span></li> </ol>	<p><b>1</b></p> <p><b>4</b></p> <p><b>5 Mark</b></p>

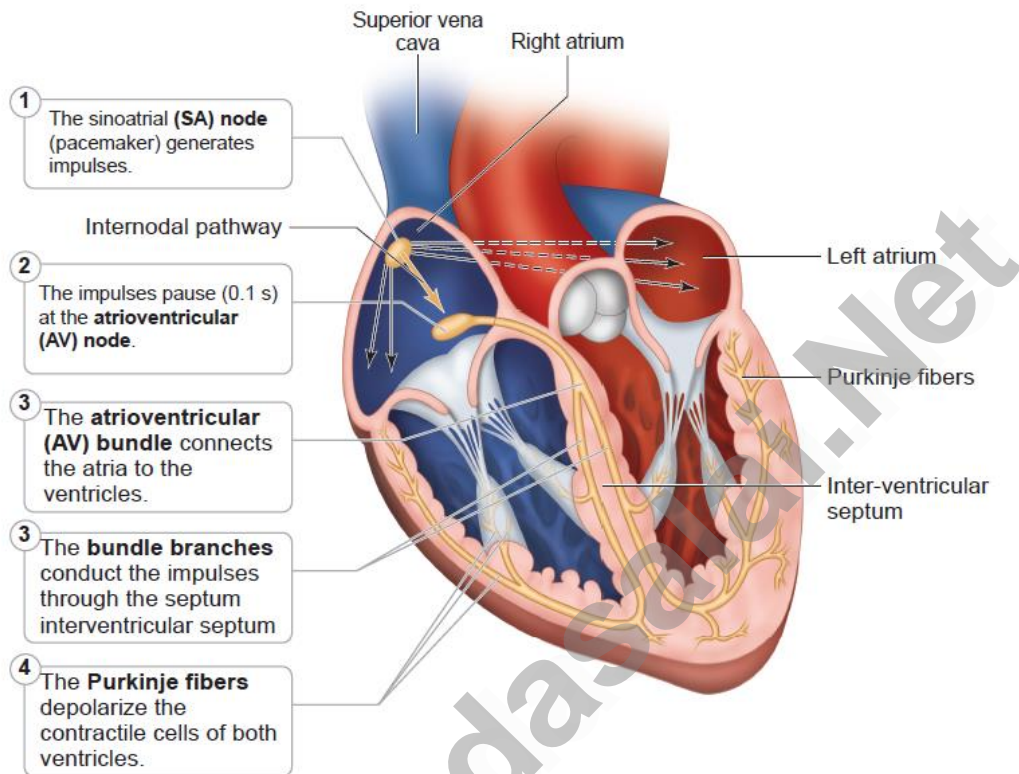
	<p><b>COMPOUND EPITHELIUM</b></p> <p><b>Stratified squamous epithelium</b></p> <ol style="list-style-type: none"> <li>1. Keratinized type - forms the dry epidermis of the skin</li> <li>2. Non keratinized type - Forms the moist lining of the oesophagus, mouth, conjunctiva of the eyes and Vagina.</li> <li>3. Stratified cuboidal epithelium - Mostly found in the ducts of sweat glands and mammary glands.</li> <li>4. Stratified columnar epithelium - Has limited distribution in the body, Found around the lumen of the pharynx, Male urethra and Lining of some glandular ducts.</li> </ol>	
21. A	<p><b><u>Male reproductive system of a frog:</u></b></p> <ol style="list-style-type: none"> <li>1. The <b>male</b> frog has a pair of testes.</li> <li>2. They are attached to the kidney and the dorsal body wall by mesorchium.</li> <li>3. Vasa efferentia arise from each <b>testis</b>.</li> <li>4. They enter the kidneys on both side and open into the bladder canal.</li> <li>5. Finally, it communicates with the urinogenital duct that comes out of kidneys and opens into the cloaca.</li> </ol>  <p><b>Explanation: 3 Mark</b> <b>Diagram: 2 Mark</b></p>	
OR		
21. B	<p><b>Describe the mechanism by which the human heart beat is initiated and controlled.</b></p> <ol style="list-style-type: none"> <li>1. The heart in human is myogenic.</li> <li>2. cardiomyocytes can produce spontaneous rhythmic depolarisation that initiates contractions.</li> </ol> <p><b>SA - node / Pacemaker:</b></p> <ol style="list-style-type: none"> <li>1. The cardiac cells located in the right sinuatral (SA) node / Pacemaker.</li> <li>2. These cells determine the contraction rate of the entire heart.</li> </ol> <p><b>Auriculo ventricular node (AV node):</b></p> <ol style="list-style-type: none"> <li>3. located on the left side of the right atrium.</li> </ol> <p><b>Bundle of His:</b></p> <ol style="list-style-type: none"> <li>4. Special cardiac muscle fibres originate from the auriculo ventricular node.</li> <li>5. This bundle of his runs down into the interventricular septum.</li> </ol> <p><b>Purkinje fibres:</b></p> <ol style="list-style-type: none"> <li>6. Fibres from the bundle of his, spread into the ventricles</li> </ol>	

**Mechanism of origin and conduction of heart beats:****Early depolarization:**

1. Slow and takes place by sodium influx and reduction in potassium efflux.

**Rapid depolarization:**

2. Minimum potential is required to activate voltage gated calcium (Ca<sup>+</sup>) channels that cause rapid depolarization which results in action potential.
3. **Repolarisation:** Slowly via K<sup>+</sup> efflux.



**Diagram – 2 Mark**

**SA node: 1 Mark,**

**AV Node – ½ Mark,**

**Bundle of his – ½ mark**

**Purkinje fibers – ½ Mark**

**Depolarisation – ½ Mark**

Prepared by:

**BHARATHIRAJA A**

M.Sc., M.Phil., M.Ed., DOA,

**PGT IN ZOOLOGY,**

**PUDUKKOTTAI.**

**CELL: 9944277623**