

**DIRECTORATE OF GOVERNMENT EXAMINATIONS CHENNAI - 6**

**HSE FIRST YEAR (+1) EXAMINATION - MARCH -2025**

**BIO-ZOOLOGY - KEY ANSWER.**

**TOTAL MARKS-35**

**Note:**

- 1. Answers written only in Black or blue should be evaluated**
- 2. Choose the Correct answer and write the option code**

**SECTION -1**

**Answer all the questions:**

**8x1=8**

<b>Type A</b>			<b>Type B</b>		
1	c	Ornamental breeds - Silkie	1	a	Carbamino Haemoglobin
2	a	Increased Energy output for nerve impulse conduction	2		Mere attempt
3	a	Pneumatic bones	3	a	The total surface area of the capillaries is larger than the total surface area of the arterioles
4	b	Areolar Tissue	4	a	Increased Energy output for nerve impulse conduction
5	a	Carbamino Haemoglobin	5	c	Ornamental breeds - Silkie
6		Mere attempt	6	b	Areolar Tissue
7	a	The total surface area of the capillaries is larger than the total surface area of the arterioles	7	a	Antidiuretic Hormone
8	a	Antidiuretic Hormone	8	a	Pneumatic bones

## SECTION - 2

**Answer any Four questions.**

$$4 \times 2 = 8$$

9	<b>Role of Charles Darwin in relation to the concept of species :</b> In 1859 Charles Darwin in his book origin of species explains the evolutionary connection of species by the process of natural selection.	2
10	<b>Features of Bony Fishes: (Any 2 points)</b> <ul style="list-style-type: none"> <li>➤ It includes both marine and fresh water fishes.</li> <li>➤ Bony endoskeleton</li> <li>➤ Spindle shaped body</li> <li>➤ Skin is covered by ganoid, cycloid, or ctenoid scales.</li> <li>➤ Respiration is by filamentous gills.</li> <li>➤ Air bladder is present</li> <li>➤ They have a two chambered heart</li> <li>➤ Mesonephric kidneys</li> <li>➤ Sexes are separate</li> <li>➤ External fertilization</li> <li>➤ Oviparous.</li> </ul>	2
11	<b>Respiration of Earthworm :</b> <ul style="list-style-type: none"> <li>➤ Respiration takes place through the body wall <b>(or)</b></li> <li>➤ The outer surface of the skin is richly supplied with blood capillaries which aid in the diffusion of gases. <b>(or)</b></li> <li>➤ Oxygen diffuses through the skin into the blood while carbon dioxide from the blood diffuses out. <b>(or)</b></li> <li>➤ The <b>skin is kept moist</b> by mucous and coelomic fluid and facilitates exchange of gases.</li> </ul>	2
12	<b>Vital Capacity :</b> The maximum volume of air that can be moved out during a single breath following a maximal inspiration <div style="text-align: center;">(OR)</div> A person first inspires maximally then expires maximally. <div style="text-align: center;">(OR)</div> $\text{Vital Capacity} = \text{Expiratory Reserve Volume} + \text{Tidal Volume} + \text{Inspiratory Reserve Volume}$ <div style="text-align: center;">(OR)</div> $\text{VC} = \text{ERV} + \text{TV} + \text{IRV}$	2
13	<b>Reabsorption part of the nephron :</b> Proximal convoluted tubule (or) PCT of the nephron reabsorbs most of the substances.	2

14	<b>Steroid hormones:</b> ➤ Cortisol ➤ Aldosterone ➤ Testosterone ➤ Oestrogen ➤ Progesterone ➤ FSH	(Any four)	2
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### SECTION – 3

**Answer any three questions.**

**Question No.19 is compulsory:**

**3 x 3 = 9**

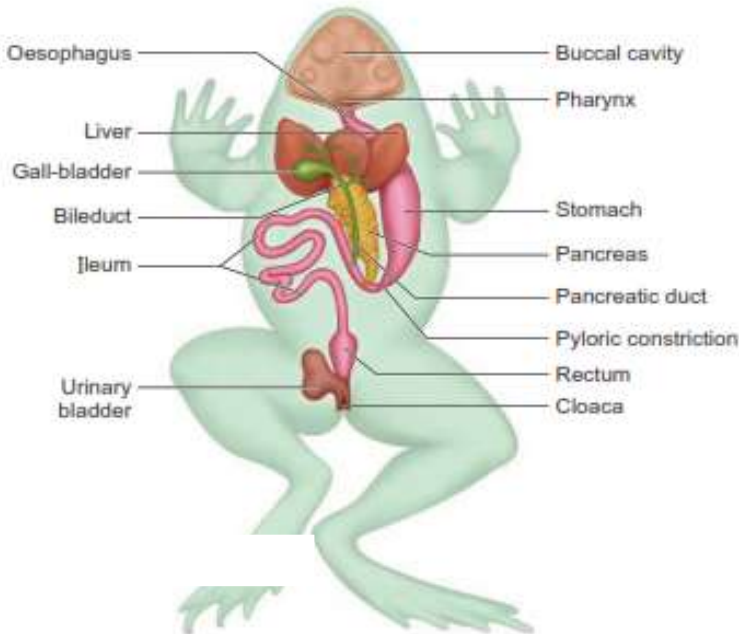
15	<b>Functions of air bladder in fishes:</b> 1. It helps in gaseous exchange  2. For maintaining buoyancy.	1 ½  1 ½
16	It acts as an important site for cellulose digestion with the help of symbiotic bacteria	3
17	<b>Economic importance of silk:</b> 1. Silk fibers are used to preparing silk clothes. 2. Silk is used to prepare ornamented fabrics. 3. Silk is used in industries and for military purposes. 4. Fishing fibers. 5. Parachute. 6. Cartridge bags. 7. Insulation coils for telephone and wireless receivers 8. Tyres of racing cars. 9. Filter fibers. 10. It is used in medical dressings and as suture materials.	(Any 3 points)  3
18	<b>Functions of adrenalin hormone:</b> 1. It is referred as “3 F hormone” (Fight, Flight, and Fright Hormone) 2. It increases liver glycogen breakdown into glucose. 3. Increases the release of fatty acids from fat cells. 4. During emergency it increase heart beat rate and blood pressure. 5. It stimulates the smooth muscle of cutaneous and visceral arteries to decrease blood flow. 6. It increase blood flow to the skeletal muscles there by increase the metabolic rate of skeletal muscles, cardiac muscles and nervous tissues.	(Any 3 points)  3

19	<b>Synovial Joints with Examples.</b>	<b>(Any Three)</b>	<b>3</b>
	Pivot joint	between atlas and axis	
	Plane/gliding joint	between the carpals	
	Saddle joint	between the first carpal and metacarpal	
	Ball and socket joint	between humerus and pectoral girdle	
	Hinge joint	knee joint	
	Condylod or Angular or Ellipsoid	between radius and carpal	

#### SECTION – 4

Answer all the questions.

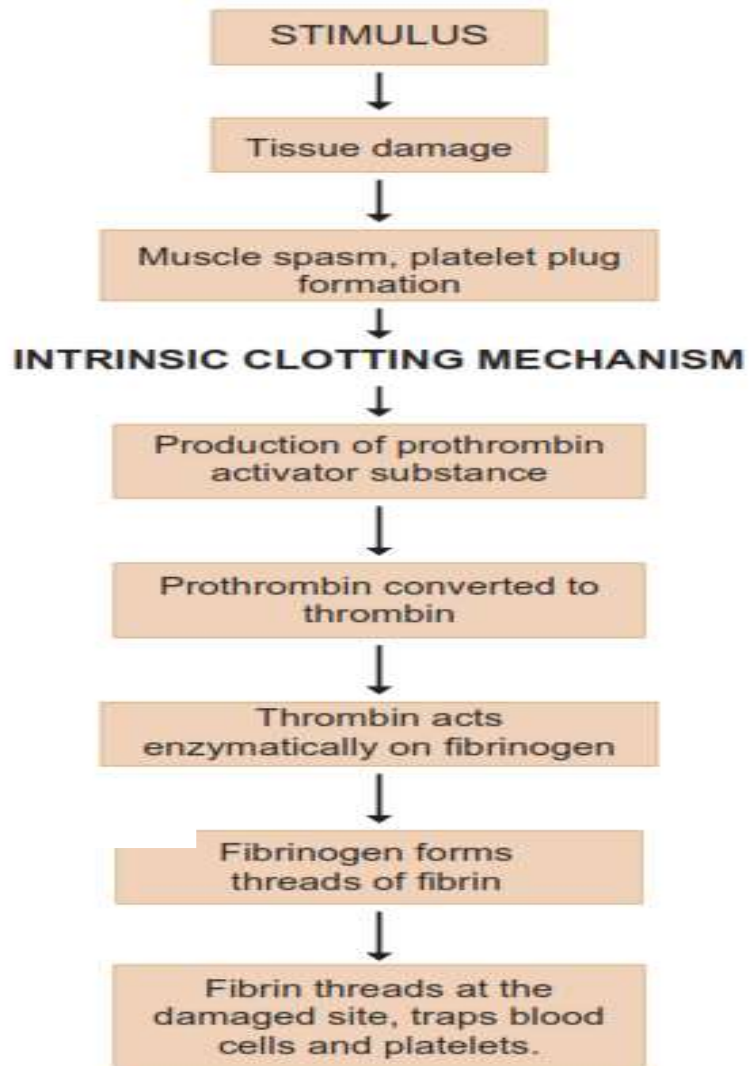
2 x 5 = 10

20 a	<b>Digestive System of Frog:</b>  <p><b>Figure 4.18 Digestive System of <i>Rana hexadactyla</i></b></p>	<b>Diagram 3</b>  <b>(Any 4 parts) 2</b>
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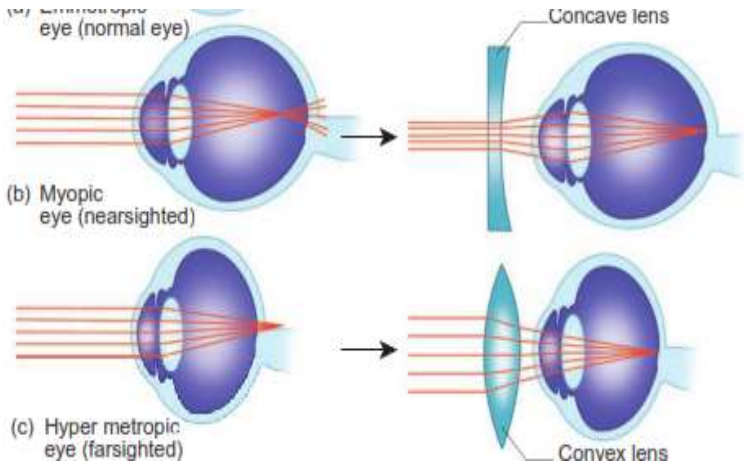
(OR)

**Blood Coagulation in an injured Blood Vessel.**

b



**Figure 7.3** Schematic Representation of Blood Coagulation in an injured Blood Vessel

21 a	<p><b>Refractive error of eye:</b></p> <p><b><u>Myopia :</u></b>  The affected person can see the nearby objects but not the distant objects.  This condition may result due to an elongated eyeball or thickened lens.  So that the image of distant object is formed in front of the yellow spot.  This error can be corrected using concave lens.</p> <p><b><u>Hypermetropia:</u></b>  The affected person can see only the distant objects but not the object near by.  This condition may results due to shortened eyeball and thin lens.  So the image of closest object is converged behind the retina.  This defect can be overcome by using convex lens.</p> <p>Diagram</p> 	<p><b>1½</b></p> <p><b>½</b></p> <p><b>1½</b></p> <p><b>½</b></p> <p><b>½</b></p>
21 b	<p><b>Nutritive Values of Fishes: (Any Five)</b></p> <ol style="list-style-type: none"> <li>1. Fishes are protein rich food.</li> <li>2. They have high aminoacid concentration.</li> <li>3. It is rich in fat such as omega 3 fatty acid.</li> <li>4. Minerals such as Calcium, Magnesium, Phosphorous, Potassium, Iron, Manganese, Iodine and Copper.</li> <li>5. Fish oil contains Vitamin A and D.</li> <li>6. It is used to prepare laundry soaps, paints, and cosmetics.</li> <li>7. Fish meal is used to prepare food of pig, poultry and cattle.</li> <li>8. Isinglass is used for clarification of wine, beer and vinegar.</li> </ol>	<p><b>5</b></p>