

SUB: BIO - ZOOLOGY

12.4.2022

**PLUS ONE - SCORING KEY – REVISION EXAM - 1
PUDUKKOTTAI. DIST.**

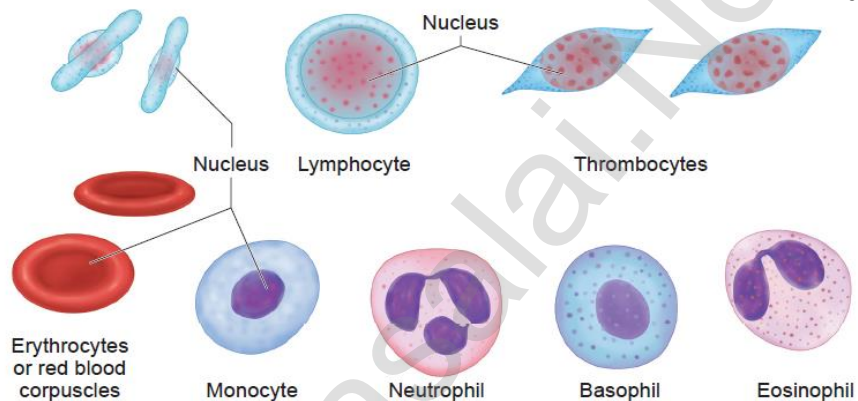
Q.NO	PART-I		5 x 1 = 5
1	d	Both A and R are false	
2	c	Arthropodes are Euecoelomates	
3	d	Ctenophores	
4	d	Trachea	
5	c	Hermaphrotite but not self-fertilizing	
6	b	Renin – Liver	
7	b	Fructose	
8	C	Nitrogen narcosis	

PART - II. ANSWER TO ANY FOUR OF THE FOLLOWING

4 X 2 = 8

9	<p>1. Species is the basic unit of classification in the taxonomic hierarchial system. --- ½ Mark</p> <p>2. A group of animals having similar morphological features (traits) --- 1 Mark</p> <p>3. And is reproductively isolated to produce fertile offspring. --- 1 Mark</p>
10	<p>1. In some animals, the body is externally and internally divided into a series of repeated units called segments, with a serial repetition of some organs (Metamerism). --- 2 Marks</p>
11	<p>1. The adipose tissue which contains abundant mitochondria is called 'Brown fat' or Brown adipose tissue. --- ½ Mark</p> <p>2. Brown fat is used to heat the blood stream to warm the body. --- ½ Mark</p> <p>3. Brown fat produces heat by non-shivering thermogenesis in neonates. --- ½ Mark</p> <p>4. White fat stores nutrients --- ½ Mark</p>
12	<p>1. In water, skin - cutaneous respiration). --- ½ Mark</p> <p>2. On land, - buccal respiration --- ½ Mark</p> <p>3. On land by lungs - pulmonary respiration. --- ½ Mark</p>
13	<p>1. BMI is calculated as body weight in Kg, divided by the square of body height in meters. --- ½ Mark</p> <p>2. $\frac{79}{173} = \frac{79}{1.73 \times 1.73} = \frac{79}{2.99} = 26.42$ --- 1 ½ Mark</p>
14	<p>1. If the iron component of the haem moieties is in the ferric state, than the normal ferrous state, it is called methaemoglobin. --- 2 Mark</p>

PART - III. ANSWER TO ANY THREE OF THE FOLLOWING		3 X 3 = 9
15	<ol style="list-style-type: none"> Beneficial probiotic bacteria. Harmful pathogenic bacteria. 	<p>--- 1 ½ Mark</p> <p>--- 1 ½ Mark</p>
16	<ol style="list-style-type: none"> Cnidarians exhibit two basic body forms, polyp and medusa. The polyp forms are sessile and cylindrical (e.g. <i>Hydra</i>, <i>Adamsia</i>), The medusae are umbrella shaped and free swimming. Cnidarians which exist in both forms, also exhibit alternation of generations in their life cycle (Metagenesis). 	<p>--- ½ Mark</p> <p>--- ½ Mark</p> <p>--- ½ Mark</p> <p>--- 1 ½ Mark</p>
17	<ol style="list-style-type: none"> The blood consists of plasma [60%] and blood cells [40 %], red blood cells, white blood cells, and platelets. RBCs are loaded with red pigment, nucleated and oval in shape. Leucocytes are nucleated, and circular in shape. Diagram - 	<p>--- 1 Mark</p> <p>--- ½ Mark</p> <p>--- ½ Mark</p> <p>--- 1 Mark</p>
18	<ol style="list-style-type: none"> The bile contains bile pigments (bilirubin and biliverdin) as the break down products of hemoglobin of dead RBCs, bile salts, cholesterol and phospholipids but has no enzymes. Bile helps in emulsification of fats. Bile salts reduce the surface tension of fat droplets and break them into small globules. <p>Bile also activates lipases to digest lipids.</p>	<p>--- ½ Mark</p> <p>--- 1 Mark</p> <p>---1 Mark</p> <p>--- ½ Mark</p>
19	<p>Blood transports CO₂ from the tissue cells to the lungs in three ways.</p> <ol style="list-style-type: none"> Dissolved in plasma about 7 – 10% of CO₂ is transported in a dissolved form in the plasma. As bicarbonate ions in plasma about 70% of CO₂ is transported as bicarbonate ions This is influenced by pCO₂ and the degree of haemoglobin oxygenation. RBCs contain a high concentration of the enzyme, carbonic anhydrase, whereas a small amount of carbonic anhydrase is present in the plasma. 	<p>--- 1 Mark</p> <p>--- 1 Mark</p> <p>--- 1 Mark</p>



PART - IV. ANSWER THE FOLLOWING

2 X 5 = 10

20. A

1. This is the **largest phylum of the Kingdom Animalia** and includes the largest class called Insecta (total species ranges from 2-10 million)
2. They are bilaterally symmetrical, segmented, triploblastic and schizocoelomate animals with organ system grade of body organisation.
3. They **have jointed appendages** which are used for locomotion, feeding and are sensory in function.
4. Body is **covered by chitinous exoskeleton** for protection and to prevent water loss, It is shed off periodically by a process called moulting or ecdysis.
5. **The body consists of a head, thorax, and abdomen** with a body cavity called haemocoel.
6. **Respiratory organs are gills, book gills, book lungs or trachea.**
7. **Circulatory system is of open type.**
8. **Sensory organs like antennae, eyes (compound and simple), statocysts (organs of balance/equilibrium) are present.**
9. **Excretion takes place through malpighian tubules, green glands, coxal glands, etc.**
10. They are mostly dioecious and oviparous; fertilization is usually internal.
11. Development may be direct or indirect.
12. Life history includes many larval stages followed by metamorphosis.
13. Examples : *Limulus* (King crab, a living fossil), *Palamnaeus* (Scorpion), *Eupagarus* (Hermit crab), *Apis* (Honey bee), *Musca* (House fly),
14. Vectors- *Anopheles*, *Culex*, *Aedes* (mosquitoes),
15. Economically important insects - *Apis*- (Honey bee), *Bombyx* (Silk worm), *Laccifer* (Lac insects), Living fossils *Limulus*- (King crab), Gregarious pest - *Locusta* (Locust)

Any five points : 5 X 1 = 5

20. B

1. The **male frog** has a pair of testes which are attached to the kidney and the dorsal body wall by folds of peritonium called mesorchium. --- 1 Mark
2. Vasa efferentia arise from each **testis**. --- 1 Mark
3. They enter the kidneys on both side and open into the bladder canal. --- 1 Mark
4. Finally, it communicates with the urinogenital duct that comes out of kidneys and opens into the cloaca. --- 1 Mark
5. **Diagram -** --- 1 Mark

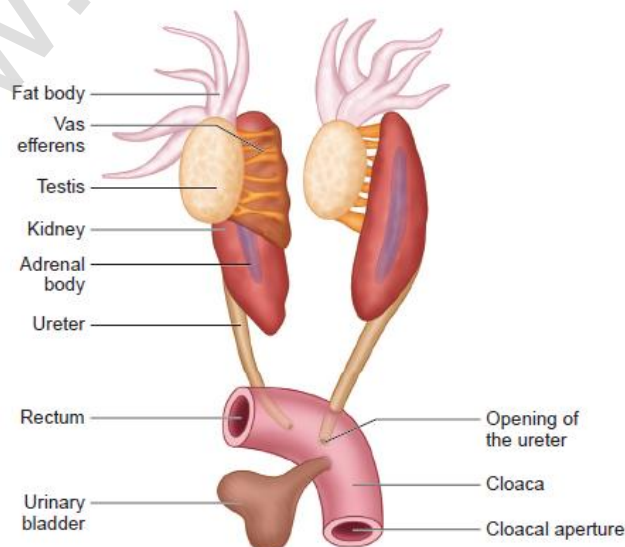


Figure 4.23 *Rana hexadactyla* - Male Reproductive System

21.A

The secretions of the Brunner's gland along with the secretions of the intestinal glands constitute the intestinal juice or **succus entericus**. --- 1 Mark

Enzymes in the intestinal juice:

1. Maltase, lactase, sucrase (invertase), dipeptidases, lipases, nucleosidases act on the breakdown products of bile and pancreatic digestion. --- ½ Mark

1. Maltose	Maltase	→	glucose + glucose	--- ½ Mark
2. Sucrose	sucrase	→	glucose + fructose	--- ½ Mark
3. Lactose	Lactase	→	glucose + galactose	--- ½ Mark
4. Dipeptides,	Tripeptides	→	Peptidase amino acids.	--- ½ Mark
5. Nucleotides	Nucleotidase	→	Nucleoside + Phosphoric acid	--- ½ Mark
6. Nucleoside	Nucleosidase	→	Sugar + Nitrogen base	--- ½ Mark
7. Diglycerides and monoglycerides	Lipases	→	Fatty acids + glycerol	--- ½ Mark

Mechanism of breathing:

--- 1 Mark

- The movement of air between the atmosphere and the lungs is known as ventilation or breathing.
- Inspiration and expiration are the two phases of breathing.
- Inspiration is the movement of atmospheric air into the lungs and expiration is the movement of alveolar air that diffuse out of the lungs.

Inspiration:

--- 1 ½ Mark

- Inspiration occurs if the pressure inside the lungs (intrapulmonary pressure) is less than the atmospheric pressure likewise expiration takes place when the pressure within the lungs is higher than the atmospheric pressure.
- Inspiration is initiated by the contraction of the diaphragm muscles and external intercostal muscles, which pulls the ribs and sternum upwards and outwards and increases the volume of the thoracic chamber in the dorso-ventral axis, forcing the lungs to expand the pulmonary volume.
- The increase in pulmonary volume and decrease in the intrapulmonary pressure forces
- The fresh air from outside to enter the air passages into the lungs to equalize the pressure. This process is called **inspiration**.

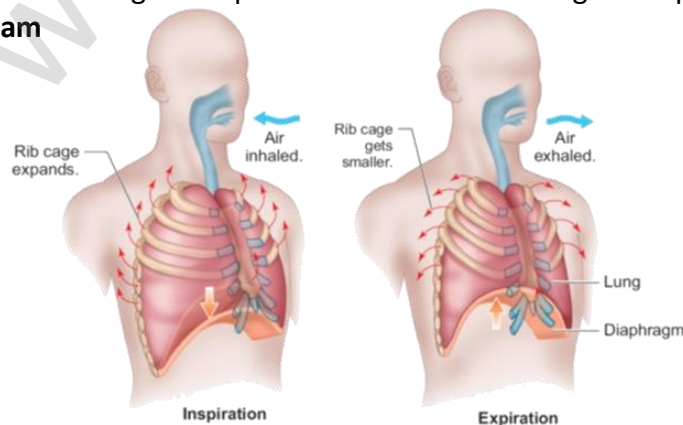
Expiration:

--- 1 ½ Mark

- Relaxation of the diaphragm allows the diaphragm and sternum to return to its dome shape and the internal intercostal muscles contract, pulling the ribs downward reducing the thoracic volume and pulmonary volume.
- This results in an increase in the intrapulmonary pressure slightly above the atmospheric pressure causing the expulsion of air from the lungs. This process is called **expiration**.

10. Diagram

½ + ½ = 1 Mark



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