

Directorate of Government Examination- Chennai – 600 006
HSC First Year Public Examination – March – 2024
Part -II Bio Zoology Key Answer

Note:-

1. Answer written only in BLACK or Blue should be evaluated
2. Write and underline and pencil to draw diagrams.
3. Choose the correct answer and write the option code if one of them (option of answer) is wrong, then award zero mark only

Maximum marks :35

Note : Answer all the questions

Section – 1

8X1=8

Answer					
Q.No	Option	TYPE - A	Q.No	Option	TYPE - B
1	d	Evolutionary and Phylogenetic	1	a	Assertion and reason are correct and related
2	c	Tidal Volume (TV) + Inspiratory Reserve Volume (IRV) + Expiratory Reserve Volume (ERV)	2	a	goitre
3	b	Emulsification	3	d	Limbic system
4	d	Inner wall of Bowman's capsule	4	c	Tidal Volume (TV) + Inspiratory Reserve Volume (IRV) + Expiratory Reserve Volume (ERV)
5	a	goitre	5	d	Inner wall of Bowman's capsule
6	d	Limbic system	6	d	Evolutionary and Phylogenetic
7	a	Assertion and reason are correct and related	7	a	Mosaic
8	a	Mosaic	8	b	Emulsification

Section – 2

4x2=8

Note : Answer any four questions

9	<p><u>Tetany :-</u></p> <ul style="list-style-type: none"> • Deficiency of parathyroid hormone leads to reduced blood calcium levels in the body 	2
10	<p>Types of respiration seen in frog</p> <p>Skin respiration (or) cutaneous.</p> <p>Buccal respiration.</p> <p>Pulmonary respiration (or) Lungs.</p> <p style="text-align: right;">(Any Two)</p>	2

11	Probiotic bacteria – Beneficial bacteria. Pathogenic bacteria – Harmful bacteria.	1 1	2				
12	External nostrils \implies nasal cavity \implies pharynx \implies larynx \implies trachea		2				
13	Dental formula of Human = $\frac{2123}{2123} \times 2$		2				
14	Flame cells:- Flatworms have specialized excretory cells, it helps in osmoregulation and excretion.		2				
Section – 3 Note : Answer any three questions. Question no.19 is compulsory			3X3=9				
15	<table border="1"> <thead> <tr> <th>White adipose tissue</th> <th>Brown adipose tissue</th> </tr> </thead> <tbody> <tr> <td>Adipose tissue found in subcutaneous tissue, surrounding the kidneys, eyeball and heart is called white adipose tissue. White fat stores nutrients.</td> <td>Brown adipose tissue contains more mitochondria. It is used to heat the blood stream to warm the body. It produces heat by non shivering thermogenesis in neonates.</td> </tr> </tbody> </table>	White adipose tissue	Brown adipose tissue	Adipose tissue found in subcutaneous tissue, surrounding the kidneys, eyeball and heart is called white adipose tissue. White fat stores nutrients.	Brown adipose tissue contains more mitochondria. It is used to heat the blood stream to warm the body. It produces heat by non shivering thermogenesis in neonates.	1½ 1½	3
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16	Characters of Healthy cattle :- <ul style="list-style-type: none"> • Healthy animal eat and drinks • Sleeps well regularly, • Cattle appear bright, • Alert • Active in their movement with a shiny coat. <p style="text-align: right;">(Any Two)</p> Cattle Diseases:- <ul style="list-style-type: none"> • Rinderpest, • Foot and mouth disease, • Cow pox, • Hemorrhagic fever • Anthrax <p style="text-align: right;">(Any Two)</p>	2 1	3				
17	Heart Sound : The sound produced during the cardiac cycle. Lub : At the beginning of ventricular systole first heart sound (lub) is produced associated with the closure of the tricuspid and bicuspid valves. Dub : It is second heart sound dub is associated with the closure of semilunar valves at the end of the ventricular systole.	1 1 1	3				

18	Layers of Adrenal Cortex		Secretion of Hormones		1 1 1 3
	Zona glomerulosa		mineralocorticoids		
	Zona fasciculata		Glucocorticoids such as cortisol, corticosterone and trace amounts of adrenal androgen and oestrogen		
	Zona reticularis		Adrenal androgen, Oestrogen and Glucocorticoid		
19	Osmoconformers		Osmoregulators		1½ 3 1½
	Osmoconformers are able to change their internal osmotic concentration with change in external environment. Ex. Marine molluscs and sharks		Osmoregulators maintain their internal osmotic concentration irrespective of their external osmotic environment Ex. Otters		
Sections – 4 Note : Answer all the questions.					5x2=10
20 a.	Chordates		Non – chordates		5
	Notochord is present		Notochord is absent		
	Dorsal, hollow and single nerve cord		Double ventral solid nerve cord		
	Pharynx perforated by gill slits		Gill slits absent		
	Heart is ventrally placed		Heart is dorsal or laterally placed		
	A post anal tail is present		A post anal tail is absent		
	Alimentary canal is placed ventral to the nerve cord		Alimentary canal is placed dorsal to the nerve cord		
			(Any 5)		
b	<u>Sensory receptors present in the Skin :-</u>				5
	<ol style="list-style-type: none"> 1. Tactile merkel disc – is light touch receptor lying in the deeper layer of epidermis 2. Hair follicle receptors – are light touch receptors lying around the hair follicles. 3. Meissner's corpuscles – are small light pressure receptors found just beneath the epidermis in the dermal papillae. They are numerous in hairless skin areas such as finger tips and soles of the feet. 4. Pacinian corpuscles – are the large egg shaped receptors found scattered deep in the dermis and monitoring vibration due to pressure. It allows to detect different textures, temperature, hardness and pain. 5. Ruffini endings – which lie in the dermis responds to continuous pressure. 6. Krause end bulbs – are thermoreceptors that sense temperature <p style="text-align: right;">(Any 5)</p>				

21 a	<p><u>Functions of respiratory system:-</u></p> <ol style="list-style-type: none"> 1. To exchange O₂ and CO₂ between the atmosphere and the blood 2. To maintain homeostatic regulation of body pH. 3. To protect us from inhaled pathogens and pollutants. 4. To maintain the vocal cords for normal communication (vocalization) 5. To remove the heat produced during cellular respiration. <p style="text-align: center;">(Or)</p>	1 1 1 1 1	5
b	<p style="text-align: center;"><u>Schematic presentation of muscle contraction</u></p> <pre> graph TD A[Muscle contraction is initiated by the signal from CNS] --> B[Release of acetylcholine at the neuromuscular junction] B --> C[Causes action potential in muscle fibre] C --> D[Triggers the release of calcium ions from sarcoplasmic reticulum] D --> E[Calcium ions combine with troponin and tropomyosin uncovers the binding sites on actin and initiates contraction] E --> F[Myosin binding sites on actin exposed. Myosin head binds to actin] F --> G[Myosin head executes power stroke] G --> H[Actin filament slides towards the centre of sarcomere (contraction)] H --> I[Signal from CNS stops; calcium ions are pumped back into the sarcoplasmic reticulum] I --> J[Tropomyosin masks the binding sites. Filaments pulled back to the original position (relaxation)] </pre> <p style="text-align: center;">(or)</p> <p style="text-align: center;"><u>Sliding filament theory - explanations</u></p>	1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 (or) 5	5