

38 (a)	<p><u>Method of blood smear preparation</u></p> <ol style="list-style-type: none"> 1. Place a drop of blood on a clean glass slide about 1 cm from one end 2. Using another glass slide placed at an angle of about 45° to the previous slide. 3. Spread the drop of blood quickly in one stroke as a thin film 4. Stain the film using Leishman's stain 5. Allow the slide to dry and wash the excess stain 6. Observe the slide under a light microscope 	5
(OR)		
38 (b)	<p><u>Heart beat initiated and controlled</u></p> <ol style="list-style-type: none"> 1) S.A node (pace maker) – explanation 2) AV node explanation – explanation 3) Bundle of His 4) Purnkinje fibres } –explanation 5) Diagram 	<p>1 1 1 2</p>

DIRECTORATE OF GOVERNMENT EXAMINATIONS, CHENNAI - 600006
HSC FIRST YEAR EXAMINATION, MARCH - 2024
ZOOLOGY – KEY ANSWER

TOTAL MARKS: 70

NOTE :

1. Answer written only in **BLACK** or **BLUE** should be evaluated
2. Choose the correct answer and write the option code
3. If one of them (option or answer) is wrong, then award zero mark only
4. Marks can be awarded, if students write in their own sentences with related concepts and explanations.

PART – I

Answer all the questions:

15×1 =15

Q. No	TYPE –A		TYPE – B		Marks
1	(a)	Hayem's solution	(c)	Cockroach	1
2	(a)	Antidiuretic hormone	(a)	Myosin	1
3	(d)	0.8 seconds	(b)	Annelida	1
4	(a)	Thymus gland	(a)	Oval window	1
5	(a)	Oval window	(a)	Hayem's solution	1
6	(b)	Annelida	(d)	0.8 seconds	1
7	(d)	Medulla oblongata	(a)	Thymus gland	1
8	(a)	Closure of semi-lunar valves	(b)	Walter Rosen	1
9	(c)	Cockroach	(b)	Haematology	1
10	(b)	Haematology	(d)	Brown fat	1
11	(d)	Trypsinogen into trypsin	(d)	Dr. Salim Ali	1
12	(b)	Walter Rosen	(a)	Closure of semi-lunar valves	1
13	(d)	Brown fat	(a)	Antidiuretic hormone	1
14	(a)	Myosin	(d)	Trypsinogen into trypsin	1
15	(d)	Dr. Salim Ali	(d)	Medulla oblongata	1

PART – II

Answer any six questions.

Question number 24 is compulsory.

6×2=12

Q.NO	Answer	Marks				
16	<u>Role of Charles Darwin</u> Charles Darwin in his book <u>Origin of species</u> explains the <u>evolutionary connection of species</u> by the process of natural selection.	2				
17	<u>Open & closed circulation</u> <u>Closed circulation:</u> In which the blood is <u>circulated through blood vessels</u> of varying diameters (arteries, veins and capillaries). <u>Open circulation:</u> In which the <u>blood remains filled in tissue spaces</u> due to the absence of blood capillaries. (OR) <u>Closed circulation:</u> Blood is <u>pumped by the heart and flows through blood vessels.</u> <u>Open circulation</u> Haemolymph as the circulating fluid and is <u>pumped by the heart, which flows through blood vessels into the sinuses.</u> Sinuses are referred as haemocoel.	2				
18	<u>Pseudostratified epithelium</u> Cells are <u>columnar</u> , but <u>unequal in size</u> . Although the epithelium is <u>single layered</u> yet it <u>appears to be multi-layered</u> because the <u>nuclei</u> lie at <u>different levels</u> in different cells.	2				
19	<u>Flatworm-acoelomate</u> Animals which <u>do not possess a body cavity</u> are called acoelomates. (or) Since there is no body cavity in these animals their <u>body is solid without a perivisceral cavity</u> , this restricts the free movement of internal organs.	2				
20	<table border="1"> <thead> <tr> <th>Peristomium</th> <th>Prostomium</th> </tr> </thead> <tbody> <tr> <td>In earthworm the <u>mouth is found in the centre of the first segment of the body</u></td> <td>In earthworm <u>overhanging the mouth is a small flap</u> called the upper lip</td> </tr> </tbody> </table>	Peristomium	Prostomium	In earthworm the <u>mouth is found in the centre of the first segment of the body</u>	In earthworm <u>overhanging the mouth is a small flap</u> called the upper lip	2
Peristomium	Prostomium					
In earthworm the <u>mouth is found in the centre of the first segment of the body</u>	In earthworm <u>overhanging the mouth is a small flap</u> called the upper lip					

36 (a)	<p><u>Mechanism of breathing</u></p> <p>Inspiration explanation - 2 ½ marks Expiration – explanation - 2 ½ marks</p> <p style="text-align: center;">(or)</p> <p>Events in inspiration and expiration (5 Marks)</p>	5
(OR)		
36 (b)	<p><u>Errors of refraction</u></p> <p>1) Myopia (near sightedness) 2) Hypermetropia(long sightedness) 3) Presbiopia 4) Astigmatism 5) Cataract 6) Diagrams</p> <p style="text-align: right;">} (Any Two)</p>	<p>1 1 2 1</p>
37 (a)	<p><u>Life cycle of bombyxmori</u></p> <p>Life cycle – diagram Life cycle of bombyx mori – Explanation</p>	<p>2 3</p>
(OR)		
37 (b)	<p><u>Excretory system of Lampitomaoritii – nephridia</u></p> <p>1) Excretory organ – <i>nephridia</i> 2) Types of nephridia (pharyngeal or tufted nephridia, Micronephridia or Integumentary nephridia, Meganephridia or septal nephridia) 3) Nephrostome 4) Mechanism of excretion 5) Chlorogogen cells</p>	<p>½ 1 ½ 1 1 1</p>

(OR)																							
34 (b)	<p><u>Digestion in small intestine</u></p> <p>1) Role of Bile juice (emulsification) 2) Role – Pancreatic juice (amylase, lipase, nuclease) 3) Role - Succus entericus</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right; padding-right: 20px;">Maltose</td> <td style="text-align: center; padding: 0 10px;">Maltase →</td> <td style="padding-left: 20px;">glucose + glucose</td> </tr> <tr> <td style="text-align: right; padding-right: 20px;">Sucrose</td> <td style="text-align: center; padding: 0 10px;">Sucrase →</td> <td style="padding-left: 20px;">glucose + fructose</td> </tr> <tr> <td style="text-align: right; padding-right: 20px;">Lactose</td> <td style="text-align: center; padding: 0 10px;">Lactase →</td> <td style="padding-left: 20px;">glucose + galactose</td> </tr> <tr> <td style="text-align: right; padding-right: 20px;">Dipeptides, Tripeptides</td> <td style="text-align: center; padding: 0 10px;">Peptidase →</td> <td style="padding-left: 20px;">amino acids</td> </tr> <tr> <td style="text-align: right; padding-right: 20px;">Nucleotides</td> <td style="text-align: center; padding: 0 10px;">Nucleotidase →</td> <td style="padding-left: 20px;">Nucleoside + Phosphoric acid</td> </tr> <tr> <td style="text-align: right; padding-right: 20px;">Nucleoside</td> <td style="text-align: center; padding: 0 10px;">Nucleosidase →</td> <td style="padding-left: 20px;">Sugar + Nitrogen base</td> </tr> <tr> <td style="text-align: right; padding-right: 20px;">Diglycerides and monoglycerides</td> <td style="text-align: center; padding: 0 10px;">Lipases →</td> <td style="padding-left: 20px;">Fatty acids + glycerol</td> </tr> </table> <p style="text-align: right;">(Any Three Enzymes and their action)</p>	Maltose	Maltase →	glucose + glucose	Sucrose	Sucrase →	glucose + fructose	Lactose	Lactase →	glucose + galactose	Dipeptides, Tripeptides	Peptidase →	amino acids	Nucleotides	Nucleotidase →	Nucleoside + Phosphoric acid	Nucleoside	Nucleosidase →	Sugar + Nitrogen base	Diglycerides and monoglycerides	Lipases →	Fatty acids + glycerol	1 1 3
Maltose	Maltase →	glucose + glucose																					
Sucrose	Sucrase →	glucose + fructose																					
Lactose	Lactase →	glucose + galactose																					
Dipeptides, Tripeptides	Peptidase →	amino acids																					
Nucleotides	Nucleotidase →	Nucleoside + Phosphoric acid																					
Nucleoside	Nucleosidase →	Sugar + Nitrogen base																					
Diglycerides and monoglycerides	Lipases →	Fatty acids + glycerol																					
35 (a)	<p><u>General characters of Annelida</u></p> <p>Any 5 points (5 x1 = 5)</p>	5																					
(OR)																							
35 (b)	<p><u>Functions of adrenalin/epinephrine</u></p> <ol style="list-style-type: none"> 1) The adrenal medulla secretes the hormones adrenalin and noradrenalin and is referred as "<u>3F hormone</u>" (<u>fight, flight and fright hormone</u>). 2) Adrenalin increases liver <u>glycogen breakdown into glucose</u> and increases the <u>release of fatty acids from fat cells</u>. 3) During emergency it <u>increases heart beat rate and blood pressure</u>. 4) It <u>stimulates the smooth muscles of cutaneous</u> and visceral arteries to <u>decrease blood flow</u>. 5) It <u>increases blood flow to the skeletal muscles</u> thereby increases the metabolic rate of skeletal muscles, cardiac muscles and nervous tissue. 	5																					

21	<p><u>Peculiar characters of duck</u></p> <p>1) The body is fully covered with oily feathers. 2) They have a layer of fat under their skin which prevents it from getting wet. 3) They lay eggs at night or in the morning. 4) The ducks feed on rice bran, kitchen wastes, waste fish and snails. (Any Two Points)</p>	2
22	<p><u>Uses of stethoscope</u></p> <p>1) Stethoscope helps to find the normal and abnormal heart beat sounds and also to diagnose valve functions. 2) It helps to diagnose lung diseases such as pneumonia, pulmonary edema, bronchitis and pleuritis. 3) Stethoscopes along with sphygmomanometer are used to read the blood pressure. 4) It outlines the status of cardiac, respiratory and intestinal disorders. (Any Two Points)</p>	2
23	<p><u>Cornea transplant</u> This is because <u>cornea does not have blood vessels.</u></p>	2
24	<p><u>Enzymes in intestinal juices</u> maltase, lactase, sucrase (invertase), peptidases, lipases, nucleotidases and nucleosidases (Any Four Enzymes)</p>	2

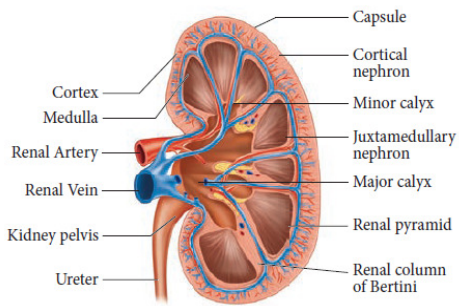
PART – III

Answer any six question

Question number 33 is compulsory.

6x3=18

Q.NO	Answer	Marks
25	<p><u>Mule sterile</u> Crosses between <u>male donkey and female horse</u> results in sterile mule. (or) Mating with <u>closely related species</u> male donkey and female horse can produce sterile offspring mule.</p>	3
26	<p><u>Limbic system-emotional brain</u> It plays a primary role in the regulation of pleasure, pain, anger, fear, sexual feeling and affection.</p>	3

27	<p><u>Human Kidney diagram</u> L.S of Human Kidney diagram - 2 Parts(any two parts) -1</p> 	3						
28	<p><u>Advantages of artificial insemination</u></p> <ol style="list-style-type: none"> 1) It increases the rate of conception 2) It avoids genital diseases 3) Semen can be collected from injured bulls which have desirable traits 4) Superior animals located apart can be bred successfully <p style="text-align: right;">(Any Three Points)</p>	3						
29	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;"> <p>white fat or white adipose tissue</p> <ol style="list-style-type: none"> 1) Adipose tissues found in subcutaneous tissue, surrounding the kidneys, eyeball, heart, etc. 2) stores nutrients </td> <td style="width: 50%; padding: 5px;"> <p>Brown fat or Brown adipose tissue</p> <ol style="list-style-type: none"> 1) The adipose tissue which contains abundant mitochondria 2) Used to heat the blood stream to warm the body. 3) Brown fat produces heat by nonshivering thermogenesis in neonates </td> </tr> <tr> <td colspan="2" style="text-align: center; padding: 5px;">(OR)</td> </tr> <tr> <td style="padding: 5px;"> <p>white fat or white adipose tissue</p> <ol style="list-style-type: none"> 1) White fat. 2) Less mitochondria 3) stores nutrients </td> <td style="padding: 5px;"> <p>Brown fat or Brown adipose tissue</p> <ol style="list-style-type: none"> 1) brown fat 2) Abundant mitochondria. 3) Place of energy production </td> </tr> </table>	<p>white fat or white adipose tissue</p> <ol style="list-style-type: none"> 1) Adipose tissues found in subcutaneous tissue, surrounding the kidneys, eyeball, heart, etc. 2) stores nutrients 	<p>Brown fat or Brown adipose tissue</p> <ol style="list-style-type: none"> 1) The adipose tissue which contains abundant mitochondria 2) Used to heat the blood stream to warm the body. 3) Brown fat produces heat by nonshivering thermogenesis in neonates 	(OR)		<p>white fat or white adipose tissue</p> <ol style="list-style-type: none"> 1) White fat. 2) Less mitochondria 3) stores nutrients 	<p>Brown fat or Brown adipose tissue</p> <ol style="list-style-type: none"> 1) brown fat 2) Abundant mitochondria. 3) Place of energy production 	3
<p>white fat or white adipose tissue</p> <ol style="list-style-type: none"> 1) Adipose tissues found in subcutaneous tissue, surrounding the kidneys, eyeball, heart, etc. 2) stores nutrients 	<p>Brown fat or Brown adipose tissue</p> <ol style="list-style-type: none"> 1) The adipose tissue which contains abundant mitochondria 2) Used to heat the blood stream to warm the body. 3) Brown fat produces heat by nonshivering thermogenesis in neonates 							
(OR)								
<p>white fat or white adipose tissue</p> <ol style="list-style-type: none"> 1) White fat. 2) Less mitochondria 3) stores nutrients 	<p>Brown fat or Brown adipose tissue</p> <ol style="list-style-type: none"> 1) brown fat 2) Abundant mitochondria. 3) Place of energy production 							
30	<p><u>Economic importance of Frog</u></p> <ol style="list-style-type: none"> 1) Frog is an important animal in the food chain; it helps to maintain our ecosystem. 2) Frog are beneficial to man, since they feed on insects and helps in reducing insect pest population. 3) Frogs are used in traditional medicine for controlling blood pressure and for its anti aging properties. 4) In USA, Japan, China and North East of India, frogs are consumed as delicious food as they have high nutritive value. <p style="text-align: right;">(Any Three Points)</p>	3						

31	<p><u>Advantages of CT</u></p> <ul style="list-style-type: none"> • Gives a clear image of bone, soft tissues and blood vessels. • Helps in the diagnosis of injuries of the inner ears and sinuses. • To detect cancer, heart and lung disorders. • For diagnosis of spinal problems and skeletal injuries. • Helps to measure bone mineral density. • To detect stroke causing clots and haemorrhage in the brain. <p style="text-align: right;">(Any Three Points)</p>	3
32	<p><u>Role of pineal gland</u></p> <ul style="list-style-type: none"> • It secretes the hormone, melatonin, • Regulation of circadian rhythm of our body • Maintains the normal sleep wake cycle. • Regulates the timing of sexual maturation of gonads. • influences metabolism, • influences pigmentation, • influences menstrual cycle • defence mechanism of our body <p style="text-align: right;">(Any Three Points)</p>	3
33	<p><u>Haldane effect</u></p> <ol style="list-style-type: none"> 1) The Haldane effect, on the other hand describes <u>how oxygen concentrations determines haemoglobin's affinity</u> for carbon dioxide. 2) The amount of carbon dioxide transported in blood is remarkably affected by the degree of oxygenation of the blood. 3) The lower the partial pressure of O₂ lower is the affinity of haemoglobin saturation with oxygen hence more CO₂ is carried in the blood. This phenomenon is called Haldane effect. 	3

PART- IV

Answer all the questions.

5x5=25

Q.NO	Answer	Marks
34 (a)	<p><u>Sliding filament hypothesis</u></p> <ol style="list-style-type: none"> 1) Sliding filament hypothesis –theory (overlapping actin and myosin filaments of fixed length slide past one another) 2) Neuromuscular junction, acetylcholine, calcium ions 3) ATP molecules-myosin+actin, cross bridge, z-disc- shortening of sarcomere <p>Diagram – (Relaxed and Contracted sarcomere)</p> <p style="text-align: center;">(or)</p> <p>Schematic representation of muscle contraction (5 Marks)</p>	<p style="text-align: right;">3</p> <p style="text-align: right;">2</p>