Zoology Teachers Association Malappuram

First Year Higher Secondary Revision Series Test-2022

Zoology Key

Chapter: BREATHING AND EXCHANGE OF GASES

BODY FLUIDS AND CIRCULATION

Qn	Scoring Key	Score
	Answer all questions from 1 to 3. Each carry 1 score	
1	Carbonic anhydrase	1
2	Serum	1
3	(b) Antigen B and antibody a	1
	Answer any Nine questions from 4 to 14. Each carry 2 score	
4	(a)Mechanism of breathing showing : (a) inspiration (b) expiration **(b) Inspiration** is initiated by the contraction of diaphragm which increases the volume of thoracic chamber in the antero-posterior axis. The contraction of external inter-costal muscles lifts up the ribs and the sternum causing an increase in the volume of the thoracic chamber in the dorso-ventral axis. The overall increase in the thoracic volume causes a similar increase in pulmonary volume. An increase in pulmonary volume decreases the intra-pulmonary pressure to less than the atmospheric pressure which forces the air from outside to move into the lungs, i.e., inspiration **Expiration:** Relaxation of the diaphragm and the inter-costal muscles returns the diaphragm and sternum to their normal positions and reduce the thoracic volume and thereby the pulmonary volume. This leads to an increase in intra-pulmonary pressure to slightly above the atmospheric pressure causing the expulsion of air from the lungs, i.e., expiration (Explain the mechanism behind inspiration/Expiration)	0.5+0.5 1
5	a) A-SAN/ Sino-atrial node B-AVN/ Atrio-ventricular node b) The SAN can generate the maximum number of action potentials, i.e., 70-75 min^{-1} , and is responsible for initiating and maintaining the rhythmic contractile activity of the heart. Therefore, it is called the pacemaker	0.5+0.5 1
6	• High Blood Pressure (Hypertension) • High blood pressure leads to heart diseases and also affects vital organs like brain and kidney	1 1
7	a)Lub and Dub b)**Lub:** is associated with the closure of the tricuspid and bicuspid valves **Dub:** is associated with the closure of the semilunar valves	0.5+0.5 0.5 0.5

8	(a) Tidal volume (TV): Volume of air inspired or expired during a normal respiration/ It is approx. 500 mL., or 6000 to 8000 mL of air per minute (b) Residual volume (RV): Volume of air remaining in the lungs even after a forcible expiration/ RV averages 1100 mL to 1200 mL.	**1** **1**
9	a)Oxygen dissociation curve b)Low pO2 , High pCO2 , high H+ concentration and higher temperature (Any two factors)	**1** **0.5+0.5**
10	a) Asthma b) Emphysema	**1** **1**
11	**(a) Systemic circulation** : The oxygenated blood entering the aorta is carried by a network of arteries, arterioles and capillaries to the tissues from where the deoxygenated blood is collected by a system of venules, veins and vena cava and emptied into the right atrium. This is the systemic circulation Or The systemic circulation provides nutrients, O2 and other essential substances to the tissues and takes CO2 and other harmful substances away for elimination Or The flow chart of blood circulation from left ventricle to Right atrium **(b) Pulmonary circulation:** The deoxygenated blood pumped into the pulmonary artery is passed on to the lungs from where the oxygenated blood is carried by the pulmonary veins into the left atrium. This pathway constitutes the pulmonary circulation Or The flow chart of blood circulation from Right ventricle to Left Atrium	**1** **1**
12	a)High Blood Pressure (Hypertension), Coronary Artery Disease (CAD), atherosclerosis, Angina, Heart Failure/congestive heart failure, cardiac arrest, heart attack **(Any two)** (b) Any relevant answer carry 1 score	**0.5+0.5** **0.5+0.5**
13	(d) Pulmonary ventilation by which atmospheric air is drawn in and $C0_2$ rich alveolar air is released out. (a) Diffusion of gases (0_2 and $C0_2$) across alveolar membrane. (b) Transport of gases by blood. (e) Diffusion of 0_2 and $C0_2$ between blood and tissues. (c) Utilisation of 0_2 by the cells for catabolic reactions and resultant release of $C0_2$. **(Any four correct sequence carry 2 score)**	**0.5** **0.5** **0.5** **0.5**
14	a) Jaundice, it is a digestive disorder and all others are disorders related to Respiratory disorder b) Biceps, it is a skeletal muscle all other muscles helps in breathing movement	**0.5+0.5** **0.5+0.5**

<table>
<tr><td></td><td></td><td></td></tr>
<tr><td colspan="3">Answer any three questions from 15 to 18. Each carries Three score</td></tr>
<tr><td>15</td><td>a)Electrocardiograph/ Electrocardiogram
b)<u>The P-wave</u> represents the electrical excitation /depolarisation of the atria/ the contraction of both the atria
<u>The T-wave</u> represents the return of the ventricles from excited to normal state /repolarisation of ventricle
c)Any deviation from normal shape indicates a possible abnormality or disease/Heart disease</td><td>1
0.5
0.5

1</td></tr>
<tr><td>16</td><td><table>
<tr><th>A</th><th>B</th><th>C</th></tr>
<tr><td>Neutrophils</td><td>60-65%</td><td>Phagocytic</td></tr>
<tr><td>Eosinophils</td><td>2-3%</td><td>Allergic reactions</td></tr>
<tr><td>Lymphocytes</td><td>20-25%</td><td>Immune response</td></tr>
</table></td><td>3</td></tr>
<tr><td>17</td><td>a) Thrombin
b) Conversion of inactive prothrombin into Thrombins
c) Calcium ion</td><td>1
1
1</td></tr>
<tr><td>18</td><td>a)SA node-Atrium Contract-AV node-AV bundle-Ventricle contract
b) A unique vascular connection exists between the digestive tract and liver called hepatic portal system
or
The hepatic portal vein carries blood from intestine to the liver before it is delivered to the systemic circulation</td><td>2

1</td></tr>
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Answer key prepared by

Academic wing-Zoology association Malappuram