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CBSE 10th : Life processes Competency Based Questions

1.

Two statements are given - one labelled Assertion (A) and the other labelled Reason (R). Read the statements carefully and choose the option that correctly describes statements A and R.

Assertion (A): Warm-blooded animals have their left and right side of the heart separated for more efficient supply of oxygen to the body.
Reason (R): Warm-blooded animals need high energy to maintain their body temperatures.

1 Both A and R are true and R is the correct explanation for A.
2 Both A and R are true but R is not the correct explanation for A.
3 A is true but R is false.
4 A is false but R is true.

2.

Many processes happen in the bodies of living organisms.

Those processes which involve the building up of complex molecules from simpler ones are called anabolism. Those which involve the breakdown of complex molecules into simpler ones are called catabolism.

Which of the following life processes can be considered as an example of anabolism?

3. **1** digestion **2** respiration **3** transpiration **4** photosynthesis

Which row in the table below shows the correct products of anaerobic respiration in humans and in yeast?

4.

	humans	humans	yeast	yeast
	lactic acid	carbon dioxide	lactic acid	carbon dioxide
1	X	√	X	X
2	√	X	X	√
3	X	√	√	X
4	√	√	√	X

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Read the following two statements and answer the question.

1. Gastroparesis is a disease in which the muscles of the stomach become paralysed and cannot contract or relax.
2. Foods high in fat can delay the process of digestion and the emptying of the stomach.

Which of the following food would be advised to a patient suffering from gastroparesis?

1 soups and juices only
2 soups and chicken salads only
3 fried chicken and fried rice
4 ice cream and milk only

5.

Which row of the table given below correctly gives the movement of gases across blood and cells?

	Oxygen	**Carbon dioxide**				
	from	**to**	**process**	**from**	**to**	**process**
1	RBC	cells	diffusion	cells	RBC	osmosis
2	RBC	cells	osmosis	cells	plasma	osmosis
3	RBC	cells	osmosis	cells	RBC	diffusion
4	RBC	cells	diffusion	cells	plasma	diffusion

6.

1 P
2 Q
3 R
4 S

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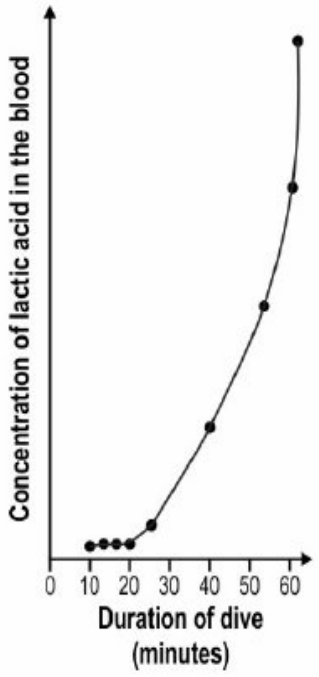
A Weddell seal, a deep-sea diving mammal, has special adaptations that enable it to respire for long periods under water without inhaling air. Three such adaptations are given below. [5]

P) When diving, the blood flow to all parts of the seal's body is reduced by 80-95%, except for a closed circuit between the lungs, heart and brain.
Q) 70% of the oxygen in the seal's body is stored in the blood (in hemoglobin), as compared to just 51% in humans.
R) 25% of the oxygen in the seal's body is stored in the muscles (in myoglobin), as compared to just 13% in humans.

In 1980, a group of scientists carried out an experiment to understand how a Weddel seal respires under water during dives of different durations. After each dive completed by the seal, they measured the concentration of lactic acid in the seal's blood. The graph below represents the data obtained by the scientists.



7. (a) Based on the graph, what can be inferred about the CHANGE in the respiration happening in the seal's body after 20 minutes under water? Justify your answer.
(b) Adaptation R helps the seal the most to produce energy for SWIMMING during the first 20 minutes of a dive. Explain why adaptations P and Q do not help as much.

8. We often hear people complain about 'acidity' in the stomach. [3]

(a) Overproduction of what substance is most likely the reason for the complaint?
(b) Why is the production of this substance necessary?
(c) How does the stomach prevent itself from the harmful effects of overproduction of the substance?

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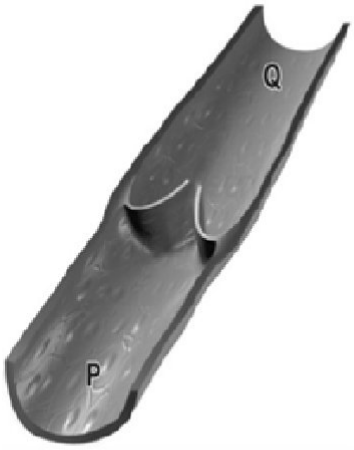
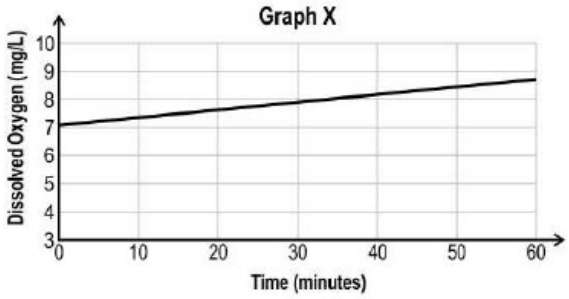
The image below shows the cross section of a blood vessel of a human arm. **[2]**

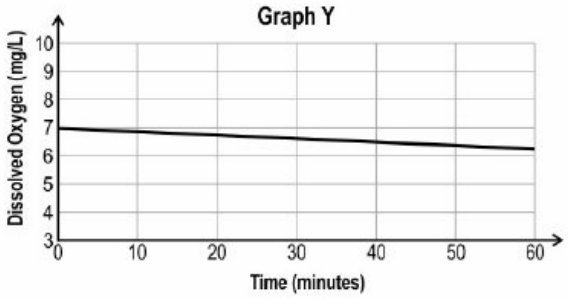


(a) What is the type of blood vessel shown in the image?
(b) Which direction will the blood flow in such a blood vessel?

9. **Anita conducted an experiment to examine photosynthesis in aquatic plants kept in a tank by measuring dissolved oxygen. She plotted her results in the following graph X:** **[4]**



She repeated the experiment while covering the tank with an opaque black cloth. She plotted the results in the following graph Y:



(a) What could be the aim of her experiment?
(b) Apart from photosynthesis, what other cellular process can be observed by the experiment?
(c) Why does the oxygen level rise in graph X?
(d) Explain the downward slope of the graph Y.