

THE OPEN UNIVERSITY OF SRI LANKA
B.Sc DEGREE PROGRAMME 2012/2013 –LEVEL 4
ANIMAL FORM AND FUNCTION – ZLU2280
OPEN BOOK TEST
DATE- 7TH APRIL 2013
TIME- 3.00- 4.30 PM

REGISTRATION NUMBER -----

PART B (60 marks)

Answer all the questions using the space provided

1. This question is based on the digestion system of human. Fill in the blanks using appropriate word/s (20 marks).

Digestion is the (1)..... and (2).....breakdown of food into smaller components that are more easily (3).....into the blood stream. The digestive tract of humans is a tube of 30 feet in length and it is compartmentalized. Mouth is the region of (4)..... and the mechanical digestion inside the mouth is mediated by (5)..... The chemical digestion of mouth is mediated by (6) in saliva. Saliva is secreted by three glands known as (7).....
...(8)..... and (9).....glands. Secretion of saliva is entirely under (10) control.

Then the food will travel down through the (11)..... to the stomach by the action of (12)..... This is the second region of the digestive tract and it is known as region of (13) The secretion of this region is entirely

(14)..... which provides lubrication. Stomach is the third region of digestive tract and known as the region of (15)..... Secretion of this region is known as gastric juice. Gastric juice contains (16)and it may damage the stomach wall. However, (17)..... secreted by the stomach, provides a slimy layer that acts as a shield against the damaging effects of the chemicals. Peptic or chief cells of the gastric glands secrete (18)which becomes activated by (19).....In side the stomach the mechanical mixing occurs by the waves of muscular contractions that move along the stomach wall. The additional muscle layer known as (20)of the wall of stomach aid in powerful contraction and allows the mass of food to further mix with the digestive enzymes. After chemical and mechanical digestion food bolus is then passed to the small intestine.

2. This question is based on the internal transport of animals (40 marks)

2.1 Why do animals require a means of internal transport? (03 marks)

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2.2. List three main functions of human blood (03 marks)

1.....

2.....

3.....

2.3 Oxygen is transported in blood in two main ways. What are those ways? (02 marks)

1.....

2.....

Question numbers 2.3 and 2.4 are based on the figure 1 below showing the two main ways of oxygen is transported in blood.

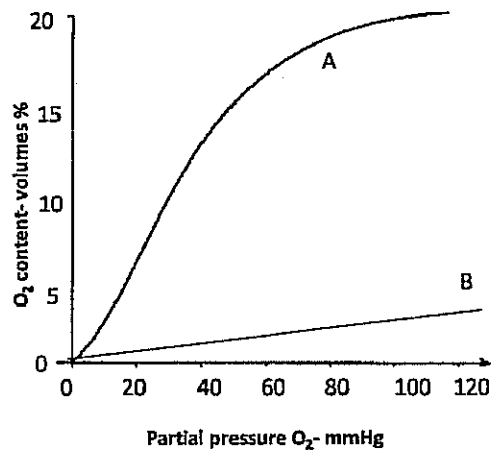


Figure 1

2.3 . Identify the transport methods indicated by A and B (04 marks).

A-

B-

2.4 Briefly explain why curve A is sigmoid shape while B is a straight line (06 marks).

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Question numbers 2.5 and 2.6 are based on the figure 2, showing the influence of CO₂ on oxygen dissociation curve.

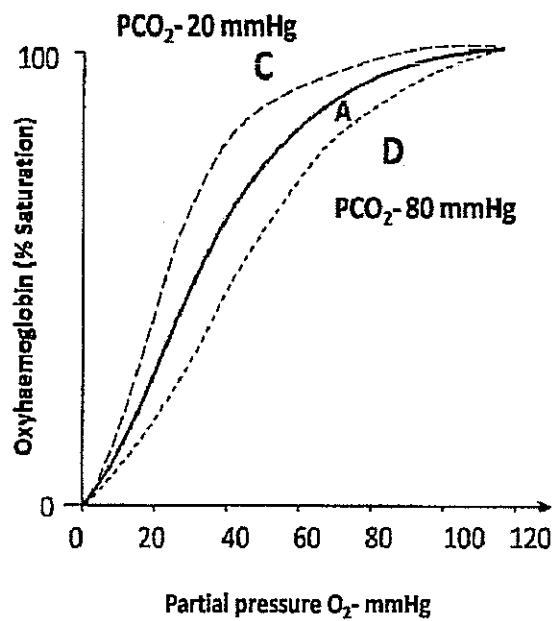


Figure 2

2.5 The two dotted curves (C and D) on either side of solid curve (A) represent oxygen content of blood under two different levels of carbon dioxide. Identify which curve represents the main blood vessels and justify your selection (04 marks).

Artery -
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Vein
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2.6 Explain the physiological importance of shifting the oxygen dissociation curve to right or left sides under different levels of carbon dioxide (04 marks).

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2.7 A group of marine diving mammals have the following structural and functional features.

- Larger volume of blood, larger blood vessels and higher RBCs count.
- Have higher amount of red muscles.

Explain how the above features help them for diving (06 marks)

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2.8. Myoglobin and haemoglobin are globular proteins that serve to bind and deliver oxygen. However, myoglobin is restricted to muscle cells while haemoglobin transports oxygen in blood. Explain why myoglobin is less efficient in transporting oxygen compared to haemoglobin? (06 marks)

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2.9. Draw the oxygen dissociation curve for myoglobin on the graph given below (02 marks)

