Answers to Test your knowledge questions

Nelson Physical Education Studies for WA 2A,2B

Chapter 9

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**multiple choice**

1 B
2 C
3 C
4 A

**short answer**

5 (max 10 marks)

*Use Figure 9.1 on page 157 as the marking key: 1 mark for each correct label.*

6 (max 3 marks)

There are numerous sensors in the body that feed the information to the brain about the amount of $O_2$ and $CO_2$ in the body. (1 mark)
The normal control of breathing occurs in the Medulla. (1 mark)
Changes in the partial pressure of $O_2$ and $CO_2$ cause the body to breathe. (1 mark)

7 (max 3 marks)

Cigarette smokers metabolise less fat. (1 mark)
Cigarette smokers tend to be less active therefore their respiratory systems do not get enough exercise. (1 mark)
The haemoglobin part of the RBC has a much larger affinity for CO (a poisonous gas from cigarettes) than it does for $O_2$. This inhibits the ability of the body to produce ATP efficiently. (1 mark)

8 Air is warmed in the airways to stop the bronchioles from contracting. This limits diffusion. (1 mark)

**essay style**

9 (max 6 marks)

*A diagram may be helpful with this answer.*

Gaseous exchange primarily involves the movement of $O_2$ and $CO_2$ in and out of the body. (1 mark)
When the partial pressure of CO₂ in the blood increases, the diaphragm relaxes and air rushes out of the lungs. (1 mark)
This is followed by a contraction of the diaphragm and air moves into the lungs. (1 mark)
Gas diffuses from the bronchioles into the blood and vice versa. (1 mark)
The diffusion is controlled by the different partial pressures of gasses. (1 mark)
When blood comes back past the lungs it has a higher pp of CO₂ compared with the bronchioles and thus CO₂ diffuses into the bronchiole. The reverse happens for O₂. (1 mark)

10 (max 15 marks)
Air enters the mouth or nose where it is warmed, filtered and moistened. (More likely to occur in the nose) (1 mark)
Air enters the pharynx at the back of the mouth. (1 mark)
Then onto the larynx (1 mark)
Trachea (1 mark)
Into the lungs – bronchus, bronchiole and alveoli (air sac) (1 mark)
In the alveoli the O₂ diffuses into the blood – into the pulmonary vein. (1 mark)
O₂ is attached to red blood cells (1 mark)
Enteres the left side of the heart into the left atrium (1 mark)
O₂/blood is forced into the left ventricle (1 mark)
O₂/blood is forced out of the heart into the aorta (major artery) (1 mark)
O₂ travels in the arterial system to cells where once in the capillary it diffuses into the cell should the cell require more O₂. (1 mark)
This occurs as the partial pressure of O₂ in the cell is lower than that of the blood. (1 mark)
CO₂ then leaves the cell as the pp of it is lower in the capillary. Attaches to the red blood cell (1 mark)
CO₂ travels in the venous network back into the right side of the heart – right atrium. (1 mark)
Coming to the heart from the superior or inferior vena cava. (1 mark)
CO₂/blood is forced into the right ventricle. (1 mark)
CO₂/blood is forced into the pulmonary vein. (1 mark)
CO₂ diffuses into the lungs and follows the reverse process as the O₂ followed in. (1 mark)