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| **Year** | **PPR** | **MKS** |  |  |
| **2016** | **2** | **1** | **2.2.1** | **List one type of blood cell.** |
| **2015** | **2** | **1** | **2.2.1** | **List two types of blood cells.** |
| 2015 | 1 | 1 | 2.2.1 | Which components help to form blood plasma? |
| 2013 | 1 | 1 | 2.2.1 | What are the major components of blood? |
| 2012 | 1 | 1 | 2.2.1 | Which is an example of a blood cell? I. leucocyte II. Platelet III. Plasma |
| **2016** | **2** | **4** | **2.2.2** | **Outline the functions of two components of blood.** |
| **2015** | **2** | **6** | **2.2.2** | **Distinguish between the function of the different types of blood cells.** |
| 2014 | 1 | 1 | 2.2.2 | Which component of blood has the primary role of fighting infection? |
| 2014 | 1 | 1 | 2.2.3 | What is the correct order for deoxygenated blood entering and leaving the heart? |
| 2014 | 1 | 1 | 2.2.2 | What is one function of platelets? |
| 2013 | 1 | 1 | 2.2.2 | Blood is made up of plasma and which type of cells? |
| 2011 | 1 | 1 | 2.2.2 | Which component of blood is required to form a blood clot? |
| 2014 | 1 | 1 | 2.2.3 | Which heart valve is indicated by label X in the diagram below? |
| 2013 | 1 | 1 | 2.2.3 | Which are the major blood vessels in the heart? |
| 2013 | 1 | 1 | 2.2.3 | Which blood vessel directly supplies the heart? |
| 2012 | 1 | 1 | 2.2.3 | Which correctly describes pulmonary circulation? |
| 2011 | 1 | 1 | 2.2.3 | Which valve is located between the right atrium and the right ventricle? |
| **2009** | **2** | **4** | **2.2.3** | **List two chambers of a heart and two major blood vessels linked to systemic circulation and the same linked to pulmonary circulation.** |
| 2016 | 1 | 1 | 2.2.4 | Which of the following correctly describes the sequence of excitation of the heart muscle? |
| 2015 | 1 | 1 | 2.2.4 | Which of the following begins intrinsic excitation of the heart? |
| **2014** | **2** | **2** | **2.2.4** | **Outline the sequence of excitation of the cardiac muscle which results in a heartbeat.** |
| 2013 | 1 | 1 | 2.2.4 | Where is the electrical impulse in the heart generated? |
| **2013** | **2** | **6** | **2.2.4** | **Describe the sequence of excitation of the cardiac muscle that results in a heartbeat.** |
| 2011 | 1 | 1 | 2.2.4 | Which is responsible for the electrical impulse that regulates the contraction of the atria in the heart? |
| 2016 | 1 | 1 | 2.2.5 | Which of the following are correct statements about the pulmonary and systemic circulatory systems? |
| **2015** | **2** | **2** | **2.2.5** | **Outline the systemic circulation.** |
| **2015** | **2** | **2** | **2.2.5** | **Distinguish between the pulmonary circulation and the sytemic circulation.** |
| 2016 | 1 | 1 | 2.2.6 | What is the relationship between heart rate, cardiac output and stroke volume? |
| 2016 | 1 | 1 | 2.2.6 | Which of the following is correct for an athlete who is exercising at a steady pace on flat terrain for a prolonged period of time? |
| 2015 | 1 | 1 | 2.2.6 | An athlete's resting heart rate is 60bpm and stroke volume is 70ml. What is the cardiac output of the athlete? |
| **2015** | **2** | **1** | **2.2.6** | **Define stroke volume.** |
| 2014 | 1 | 1 | 2.2.6 | What is the equation for cardiac output? |
| 2013 | 1 | 1 | 2.2.6 | What is the relationship between heart rate, cardiac output and stroke volume at rest? |
| **2011** | **2** | **5** | **2.2.6/2.2.7** | **Describe the relationship between heart rate, stroke volume and cardiac output during rest, sub-maximal rowing and maximal rowing.** |
| **2011** | **2** | **5** | **2.2.6/2.2.7** | **Compare the heart rate, stroke volume and cardiac output of trained rowers versus untrained rowers during rest and exercise.** |
| **2009** | **2** | **2** | **2.2.6** | **Calculate the cardiac output if the stroke volume is 75 ml min and the heart rate is 130 bpm.** |
| **2015** | **2** | **2** | **2.2.7** | **Compare the cardiac output for a trined and untrained individual during maximal exercise.** |
| **2015** | **2** | **3** | **2.2.7** | **Discuss cardiac output during jogging before and after an endurance training programme.** |
| 2012 | 1 | 1 | 2.2.7 | Which of the following occurs when an athlete moves from a stationary position to slow running? |
| **2015** | **2** | **4** | **2.2.8** | **Outline cardiovascular drift and the implications of using heart rate as a measure for training intensity during prolonged sub-maximal running.** |
| **2013** | **2** | **3** | **2.2.8** | **Explain cardiovasular drift during distnace running.** |
| **2013** | **2** | **6** | **2.2.8** | **Explain cardiovascular drift.** |
| 2015 | 1 | 1 | 2.2.9 | What is systolic blood pressure? |
| 2015 | 1 | 1 | 2.2.9 | Which are the units when measuring an athlete's blood pressure? |
| 2013 | 1 | 1 | 2.2.9 | How is systolic blood pressure best defined? |
| 2013 | 1 | 1 | 2.2.9 | What best describes diastolic blood pressure? |
| **2013** | **2** | **4** | **2.2.9** | **Compare systolic and diastolic blood pressure response between a flexed arm hang and a chin-up.** |
| 2012 | 1 | 1 | 2.2.9 | What is the definition of systolic blood pressure? |
| 2011 | 1 | 1 | 2.2.9 | What is the definition of *diastolic blood pressure*? |
| **2012** | **2** | **4** | **2.2.10** | **Discuss how systolic and diastolic blood pressure respond to static exercise.** |
| **2016** | **2** | **4** | **2.2.11** | **Analyse the systolic blood pressure response of an endurance runner.** |
| **2016** | **2** | **2** | **2.2.11** | **Comment on the variability of diastolic blood pressure during dynamic and static exercise.** |
| 2014 | 1 | 1 | 2.2.11 | What is the response of systolic blood pressure and diastolic blood pressure to maximal static exercise? |
| **2009** | **2** | **8** | **2.2.11** | **Discuss the systolic and diastolic blood pressure responses to dynamic and static exercise.** |
| **2015** | **2** | **3** | **2.2.12** | **Compare the distribution of blood at rest and the redistribution of blood during continuous sub-maximal exercise.** |
| **2014** | **2** | **2** | **2.2.12** | **Explain the redistribution of blood throughout the body during exercise.** |
| **2014** | **2** | **4** | **2.2.12** | **Compare the distribution of blood in a runner at rest and during a 10 000 m race.** |
| **2013** | **2** | **4** | **2.2.12** | **Compare the distribution of blood at rest and the redistribution of blood during a long distance run.** |
| 2016 | 1 | 1 | 2.2.13 | Which cardiovascular adaptations are a result of endurance exercise training? |
| **2016** | **2** | **5** | **2.2.13** | **Describe the cardiovascular adaptations resulting from endurance training.** |
| 2015 | 1 | 1 | 2.2.13 | What is an adaptation of endurance exercise training? |
| 2015 | 1 | 1 | 2.2.13 | An athlete is unable to train for a substantil amount of time following an injury. Which of the following will occur? |
| 2014 | 1 | 1 | 2.2.13 | Which combination describes the cardiovascular adaptations from an endurance exercise training programme? |
| 2013 | 1 | 1 | 2.2.13 | Which cardiovascular adaptation results from endurance training in athletes? |
| **2012** | **2** | **4** | **2.2.13** | **Describe the cardiovascular adaptations from chronic endurance exercise training.** |
| 2011 | 1 | 1 | 2.2.13 | Which cardiovascular adaptation most likely results from participation in a long-term aerobic training programme? |
| **2009** | **2** | **2** | **2.2.13** | **Describe two cardiovascular adaptations that occur as a consequence of aerobic exercise training that result in increased SV and maximum VO2 max.** |
| **2015** | **2** | **6** | **2.2.14** | **Explain maximal oxygen consumption.** |
| **2009** | **2** | **1** | **2.2.14** | **Define VO2 max.** |
| **2016** | **2** | **2** | **2.2.15** | **Explain the difference between adult males and females in maximal oxygen consumption.** |
| **2015** | **2** | **4** | **2.2.15** | **Explain why a fitness trainer can expect maximal oxygen consumption to vary for a family of males and females, children and adults.** |
| **2013** | **2** | **3** | **2.2.15** | **Discuss how data can vary for maximal oxygen consumption between males and females.** |
| **2015** | **2** | **2** | **2.2.16** | **Explain why maximal oxygen consumption (VO2max) data is presented in litres per minute and in milliliters per kilogram per minute.** |
| **2014** | **2** | **4** | **2.2.16** | **Discuss how maximal oxygen consumption data can vary with different modes of exercise in the same individual.** |
| **2014** | **2** | **2** | **2.2.16** | **Distinguish between the variability of maximal oxygen consumption during treadmill running and arm ergometry.** |

List two types of blood cells.

Outline the functions of two components of blood.

Distinguish between the function of the different types of blood cells.

List two chambers of a heart and two major blood vessels linked to systemic circulation and the same linked to pulmonary circulation.

Outline the sequence of excitation of the cardiac muscle which results in a heartbeat.

Outline the systemic circulation.

Distinguish between the pulmonary circulation and the sytemic circulation.

Define stroke volume.

Describe the relationship between heart rate, stroke volume and cardiac output during rest, sub-maximal rowing and maximal rowing.

Compare the heart rate, stroke volume and cardiac output of trained rowers versus untrained rowers during rest and exercise.

Calculate the cardiac output if the stroke volume is 75 ml min and the heart rate is 130 bpm.

Compare the cardiac output for a trined and untrained individual during maximal exercise.

Discuss cardiac output during jogging before and after an endurance training programme.

Outline cardiovascular drift and the implications of using heart rate as a measure for training intensity during prolonged sub-maximal running.

Explain cardiovasular drift (during distnace running).

Compare systolic and diastolic blood pressure response between a flexed arm hang and a chin-up.

Discuss how systolic and diastolic blood pressure respond to static exercise.

Analyse the systolic blood pressure response of an endurance runner.

Discuss the systolic and diastolic blood pressure responses to dynamic and static exercise.

Compare the distribution of blood at rest and the redistribution of blood during continuous sub-maximal exercise.

Explain the redistribution of blood throughout the body during exercise/ and during a 10 000 m race.

Compare the distribution of blood at rest and the redistribution of blood during a long distance run.

Describe the cardiovascular adaptations from (chronic)\* endurance exercise training. \*This question probably has ties within the section to knowledge from Option A.

Describe two cardiovascular adaptations that occur as a consequence of aerobic exercise training that result in increased SV and maximum VO2 max.

Explain maximal oxygen consumption.

Define VO2 max.

Explain the difference between adult males and females in maximal oxygen consumption.

Explain why a fitness trainer can expect maximal oxygen consumption to vary for a family of males and females, children and adults.

\*\*\*\*Explain why maximal oxygen consumption (VO2max) data is presented in litres per minute and in milliliters per kilogram per minute.

Discuss how maximal oxygen consumption data can vary with different modes of exercise in the same individual.

Distinguish between the variability of maximal oxygen consumption during treadmill running and arm ergometry (an arm cycling machine)