Name _____

Topic 1: Lifestyle, Health and Risk (Teacher 1)

Answer the following questions in as much detail as you can. Use any available resources you have (textbooks, revision guides, websites) to complete the tasks.

One of the first topics you will study is centred on the functioning of the cardiovascular system. The following questions will cover some of the key points needed to understand the topic.

Task 1

Links to the A level Biology syllabus:

1.1 Understand why many animals have a heart and circulation (mass transport to overcome limitations of diffusion in meeting the requirements of organisms).

1.3 Understand how the structures of blood vessels (capillaries, arteries and veins) relate to their functions.

1.5 Understand the course of events that leads to atherosclerosis (endothelial dysfunction, inflammatory response, plaque formation, raised blood pressure).

1.7 Know how factors such as genetics, diet, age, gender, high blood pressure, smoking and inactivity increase the risk of cardiovascular disease (CVD).

1. Describe the function of the heart. (1 mark)

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2. Describe the function of the blood. (2 marks)

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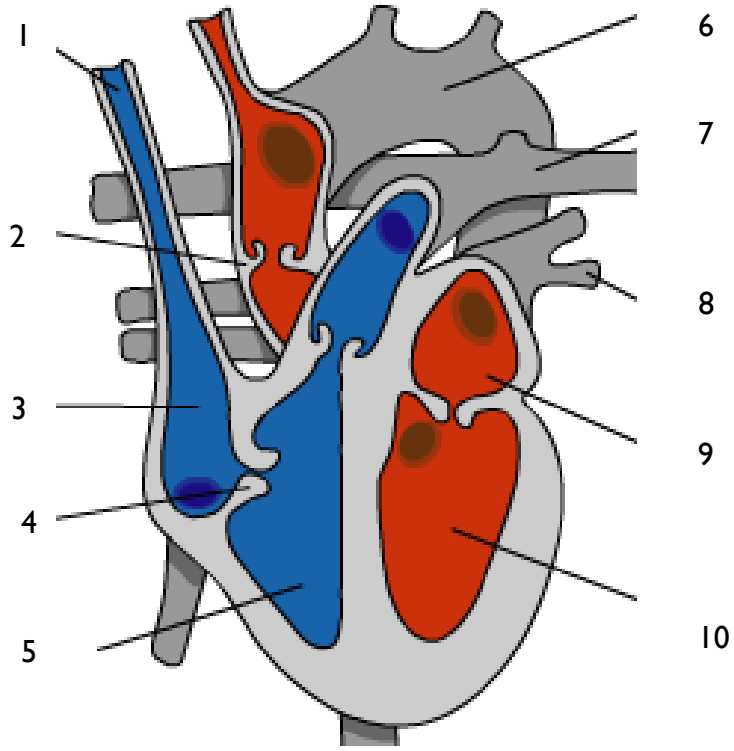
3. The diagram below shows the structure of the mammalian heart.

a) Label the diagram. (10 marks)



b) Write a description for each part you have labelled. (10 marks)

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4. There are three major types of blood vessels in the human circulatory system: arteries, veins and capillaries.

Complete the table below to summarise the function and structure of each. (10 marks)

	Function	**Structure – add a diagram**
Arteries		
Veins		
Capillaries		

Task 2 Research

Much of the work in Topic 1 focuses on the science behind cardiovascular disease including coronary heart disease and strokes.

Produce a summary page on each of these two types of cardiovascular disease (one for coronary heart disease & one for strokes), these could be hand written on file paper or typed and printed out. You should include the following and use them as *subtitles*:

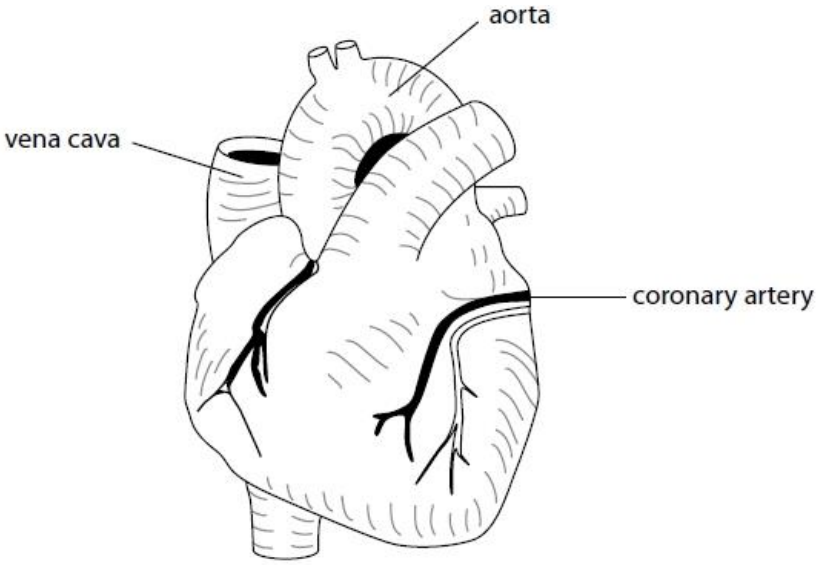
- **Causes of the disease**
- **Factors that increase the risk of the disease**
- **Symptoms**
- **Treatments**
  (lifestyle changes, medications and surgery)
- **Figures**
  Current % or numbers of the UK population who are thought to suffer with the disease (and how this trend has changed over the last 10 years)

Keep your work concise and follow the order suggested above. Ensure the work is written in your ***own words*** (no copy & paste of text) and you include ***diagrams and graphs*** to support your research.

Task 3 Maths skills

All Biology exams include questions that target mathematics at Level 2 **or above**. Overall, a minimum of 10% of the marks across the three exams you sit will be awarded for mathematics at Level 2 **or above**.

A student studied the external view of a mammalian heart, as shown in the diagram.



The student wanted to compare the size of the aorta and the vena cava of this heart.

She determined the cross-sectional area of the aorta, which was 72.22 mm^2.
She also measured the diameter of the vena cava which was 17.0 mm.

(i) Calculate the difference in the cross-sectional area of the vena cava and the aorta.

(2)

Answer ..... mm^2

(ii) The student also compared the thickness of the aorta wall of this heart with the thickness of the aorta wall in a giraffe. The thickness of the aorta wall in this heart is 3 mm and in a giraffe it is 15 mm.

Give one reason why the aorta wall in a giraffe is much thicker.

(1)

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(Total for question = 3 marks)