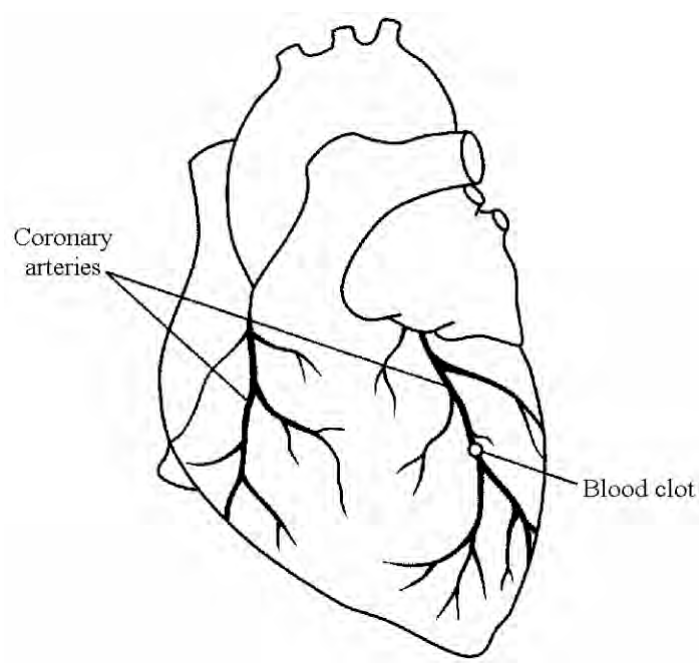


1. Coronary heart disease is a major cause of death in the western world.

(a) The diagram shows an external view of a human heart with a blood clot in one of the main coronary arteries.



(i) Shade, on the diagram, the area of heart muscle which is likely to receive a reduced supply of blood because of the blood clot.

(1)

(ii) Explain why a blood clot in a coronary artery is likely to result in a heart attack.

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(3)

- (b) Three important risk factors associated with coronary heart disease are cigarette smoking, high blood pressure and a high plasma cholesterol level. Explain how each of the three factors increases the risk of heart disease

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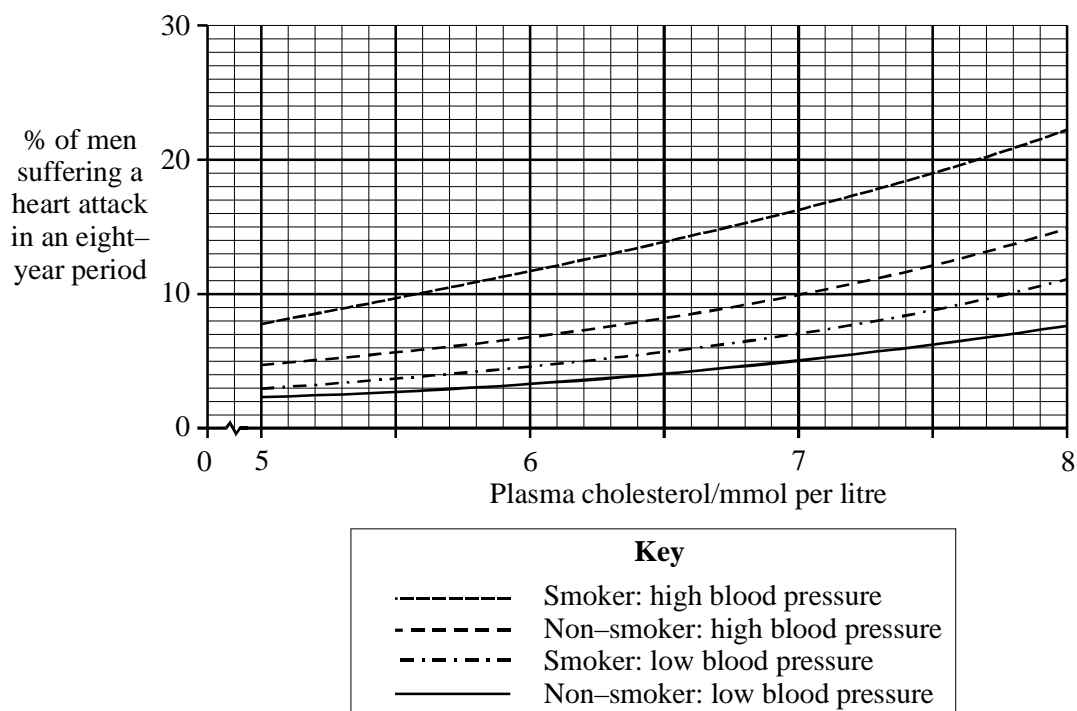
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(6)

- (c) The graph gives information about the effects of cigarette smoking, plasma cholesterol concentrations and high blood pressure on the incidence of heart disease in American men



- (i) A non-smoker with low blood pressure has a plasma cholesterol concentration of 5 mmol per litre. Over a period of time this concentration increases to 8 mmol per litre. By how many times has his risk of heart disease increased? Show your working.

Answer.....

(2)

- (ii) Two non-smoking men with low blood pressure both have plasma cholesterol concentrations of 5 mmol per litre. One of them starts to smoke and the plasma cholesterol concentration of the other increases to 7 mmol per litre. Which man is now at the greater risk from heart disease? Explain your answer.

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(3)

(Total 15 marks)

2. The table shows some information about the incidence of high blood pressure and heart attacks in the UK.

Sex	Condition	Percentage of people affected in each age group						
		16-24 years	25-34 years	34-44 years	45-54 years	55-64 years	65-74 years	74-80 years
Male	high blood pressure	0.5	1.5	3.5	6.0	17.0	22.5	18.5
	heart attack			0.1	0.2	1.1	2.4	3.2
Female	high blood pressure	0.7	1.6	3.8	7.8	20.5	27.9	26.9
	heart attack			0.1	0.3	0.6	0.7	1.8

- (a) Use the pattern of data in the table to describe:

- (i) **two** similarities between males and females;

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2 .....

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- (ii) **two** differences between males and females.

1 .....

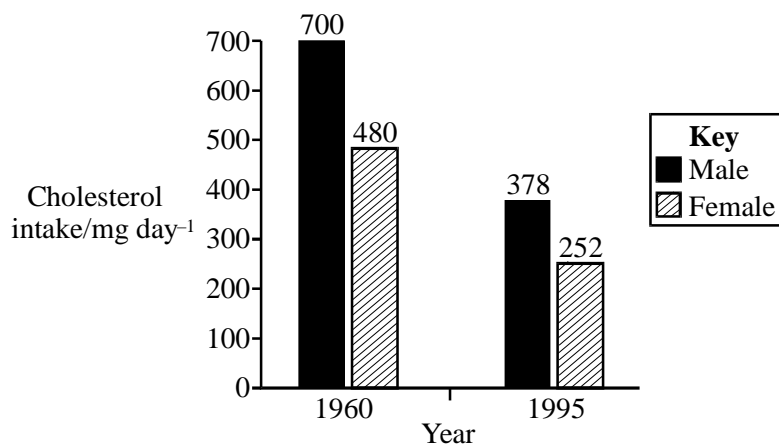
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(4)

- (b) People have been advised to reduce their cholesterol intake as a part of a healthy life style. The graph shows information about mean daily intake of cholesterol.



Calculate which group, male or female, shows the greater percentage reduction in cholesterol intake between 1960 and 1995. Show your working.

(2)

(c) Explain how smoking and a high blood cholesterol concentration increase the risk of developing coronary heart disease.

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(6)  
(Total 12 marks)

3.

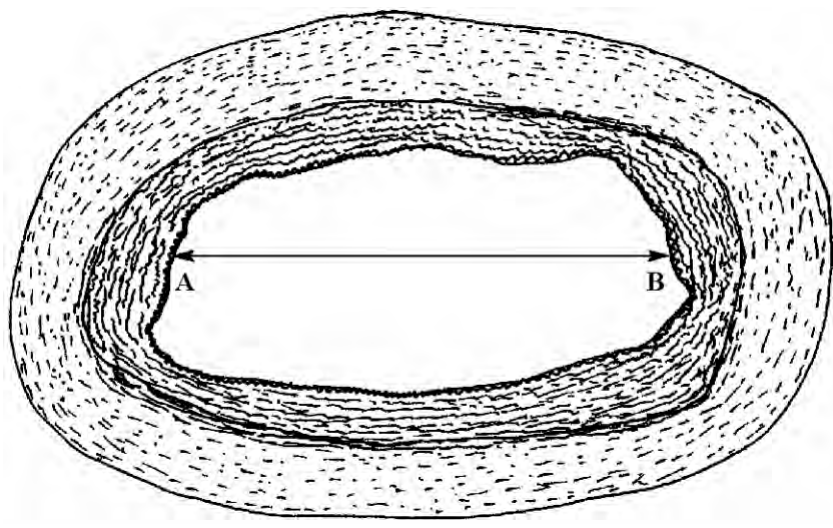


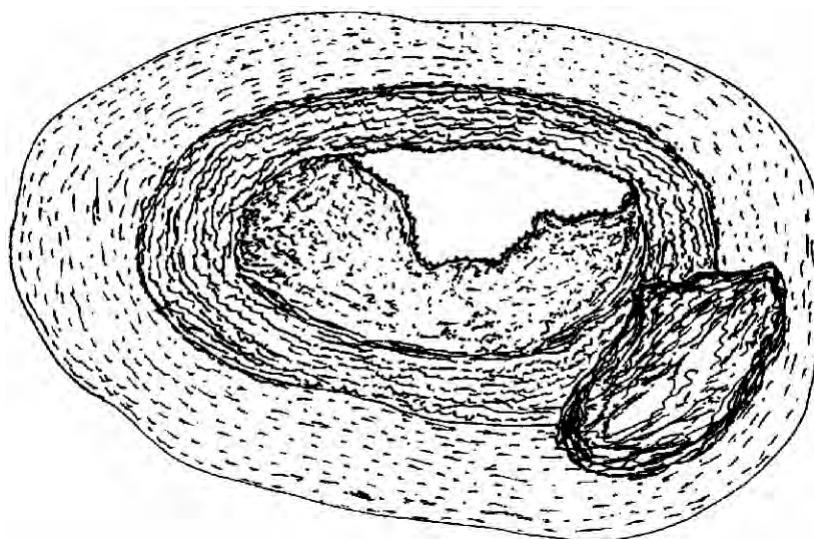
Figure 1

- (a) **Figure 1** shows a section through a healthy coronary artery. The actual diameter of the lumen of the artery along line AB is 1.94 mm. Explain how you would calculate the magnification of this drawing.

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(1)

- (b) **Figure 2** shows a section through a coronary artery from a person with atheroma.



**Figure 2**

- (i) Give **two** ways in which the artery of the person with atheroma differs from the artery of the healthy person.

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2 .....

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(2)

- (ii) Describe and explain how atheroma can lead to myocardial infarction.

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(3)  
(Total 6 marks)

4. Lung cancer, chronic bronchitis and coronary heart disease (CHD) are associated with smoking. **Tables 1** and **2** give the total numbers of deaths from these diseases in the UK in 1974.

**Table 1 Men**

Age/years	Number of deaths (in thousands)		
	lung cancer	chronic bronchitis	coronary heart disease
35 - 64	11.5	4.2	31.7
65 - 74	12.6	8.5	33.3
75+	5.8	8.1	29.1
Total (35 - 75+)	29.9	20.8	94.1

**Table 2 Women**

Age/years	Number of deaths (in thousands)		
	lung cancer	chronic bronchitis	coronary heart disease
35 - 64	3.2	1.3	8.4
65 - 74	2.6	1.9	18.2
75+	1.8	3.5	42.3
Total (35 - 75+)	7.6	6.7	68.9

- (a) (i) Using an example from the tables, explain why it is useful to give data for men and



women separately.

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(2)

(ii) Data like these are often given as percentages of people dying from each cause. Explain the advantage of giving these data as percentages.

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(2)

(b) Give **two** factors, other than smoking, which increase the risk of coronary heart disease.

Factor 1 .....

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Factor 2 .....

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(2)

**(Total 6 marks)**

5. (a) Describe how atheroma may form and lead to a myocardial infarction.

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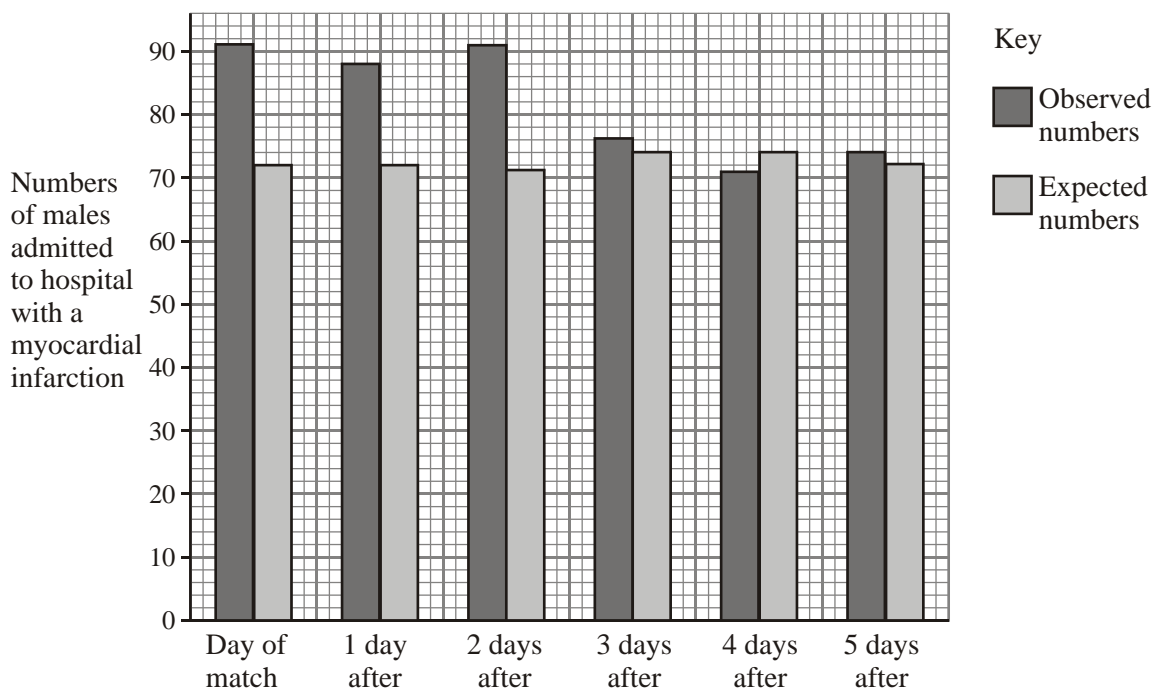
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(6)

(b) The bar chart shows the number of males aged 19-64 admitted to English hospitals with a myocardial infarction within five days of the England football team losing to Argentina by penalty shoot-out in the 1998 World Cup.



(i) Suggest how the expected number of admissions might have been calculated.

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(2)

(ii) Describe the difference between the observed and expected numbers of males experiencing a myocardial infarction over the six days.

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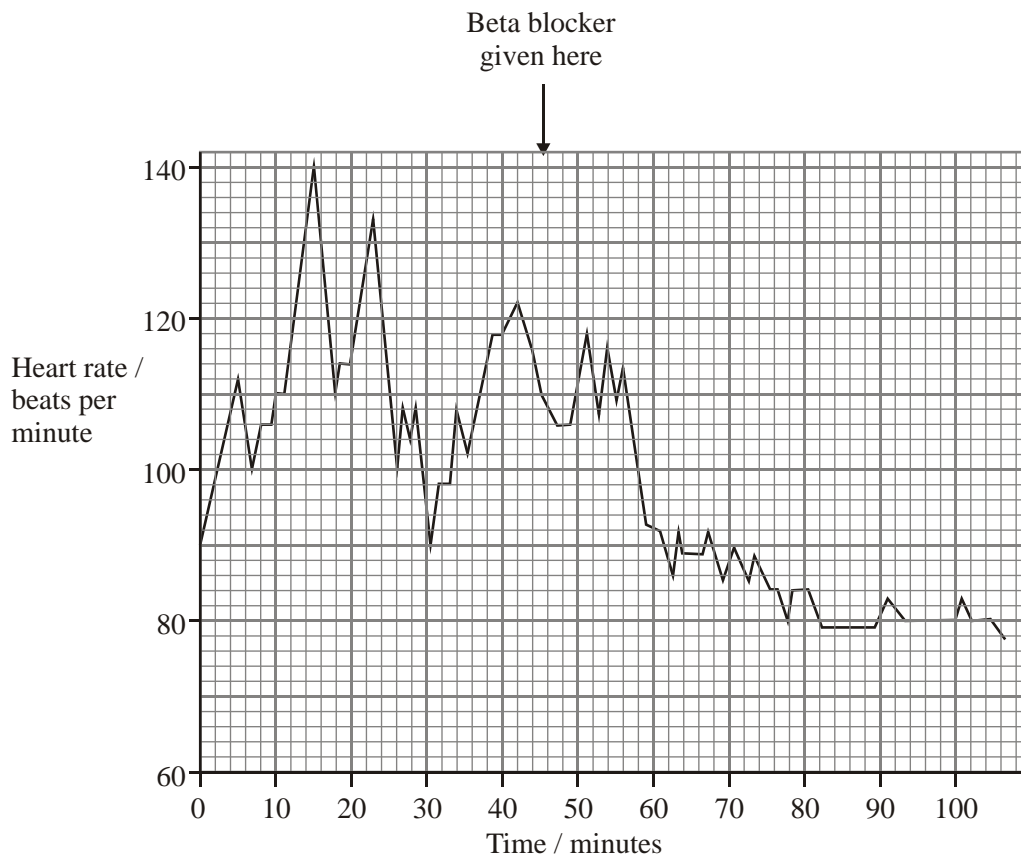
(2)

(c) Explain how repeated stress, such as that involved in watching a penalty shoot-out, may lead to a myocardial infarction.

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(2)

- (d) A group of male football supporters was shown a video recording of a football match. At the end of the first half, they were each given a beta blocker. The graph shows the heart rate of a typical individual from the investigation.



Describe and explain the effect of the beta blocker on the heart rate of this person.

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(3)  
(Total 15 marks)