

B7- Non Communicable Disease Exam Practice 1

Name:

Score:

Q1.

When an organism grows, new cells are produced by cell division.

- (a) What type of cell division happens to produce new body cells?

Tick **one** box.

Differentiation

Meiosis

Mitosis

(1)

- (b) Why can cancers grow very large?

Tick **one** box.

Cancer cells are specialised

Cell division is slow

Cell division is uncontrolled

(1)

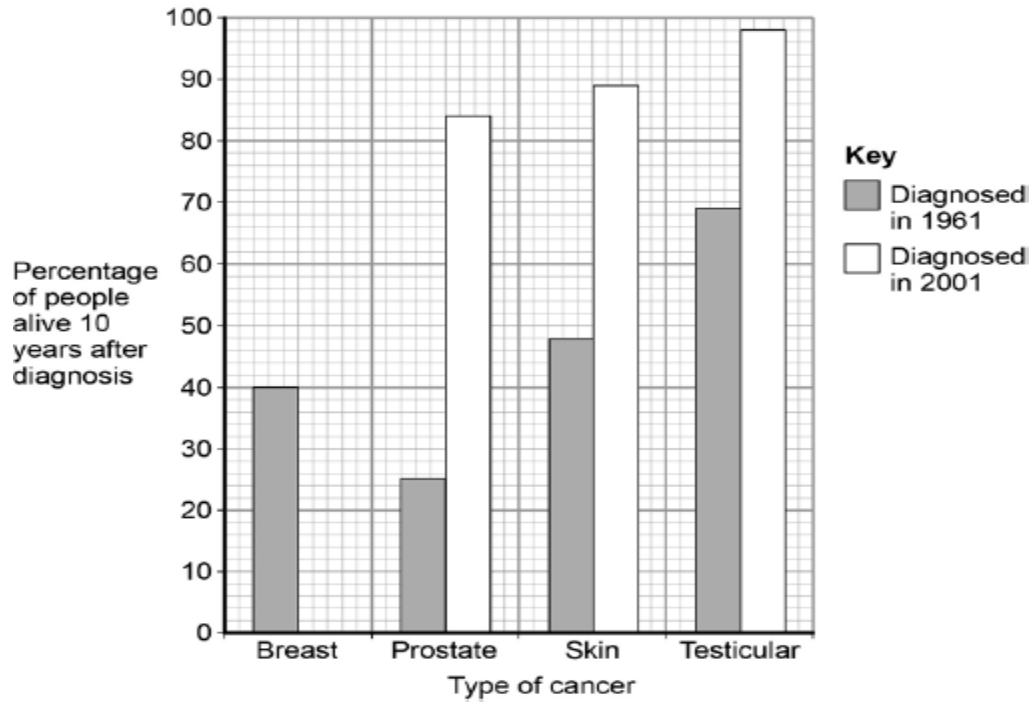
- (c) Give **one** factor which increases the risk of getting cancer.

(1)

- (d) Survival rates for people with cancer have improved a lot.

People who are alive 10 years after diagnosis are usually considered to be cured.

The figure below shows data for people diagnosed with cancer in 1961 and 2001.



78% of people diagnosed with breast cancer in 2001 were alive 10 years later.
 Complete the figure above to show this information.

(1)

(e) Which type of cancer diagnosed in 1961 had the highest survival rate?

Tick **one** box.

- Breast
- Prostate
- Skin
- Testicular

(1)

(f) Which type of cancer shows the biggest improvement in the percentage of people alive after 10 years?

Tick **one** box.

Breast

Prostate

Skin

Testicular

(1)

(g) Suggest **two** reasons why the survival rates for all cancers have increased.

1. _____

2. _____

(2)

(Total 8 marks)

Q2.

Coronary heart disease (CHD) is caused when fatty material builds up in the coronary arteries.

(a) Smoking is a risk factor for CHD.

Give **one** other disease that smoking is a risk factor for.

Do **not** refer to CHD.

(1)

(b) Suggest **two** lifestyle changes a person can make to reduce the risk of CHD. Do **not** refer to smoking in your answer.

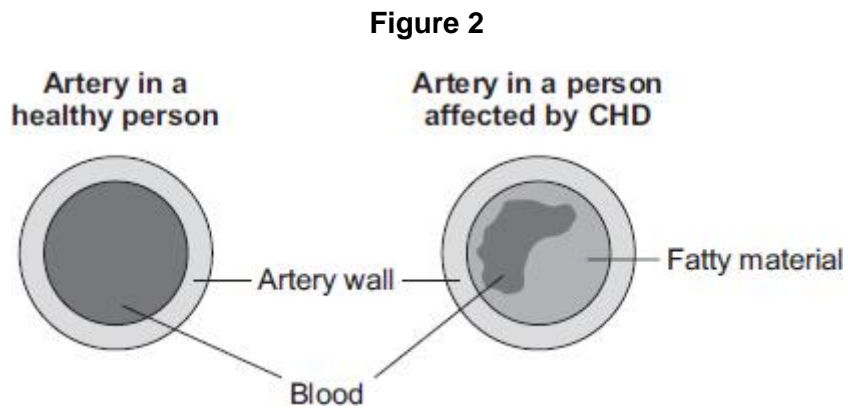
1 _____

2 _____

(2)

(c) The coronary arteries supply the heart muscle with blood.

Figure 2 shows two coronary arteries.



A person with CHD has a risk of having a heart attack.

A heart attack will cause the heart muscle to stop contracting.

Explain how CHD can cause a heart attack.

(3)
(Total 6 marks)

Q3.

A health website contains the following advice:

Stop smoking and you will be healthier and live longer.

Explain why stopping smoking will improve a person's health.

(6)
(Total 6 marks)

Higher Questions

Q4.

The number of people in the UK with tumours is increasing.

- (a) (i) Describe how tumours form.

(1)

- (ii) Tumours can be malignant or benign.

What is the difference between a malignant tumour and a benign tumour?

(1)

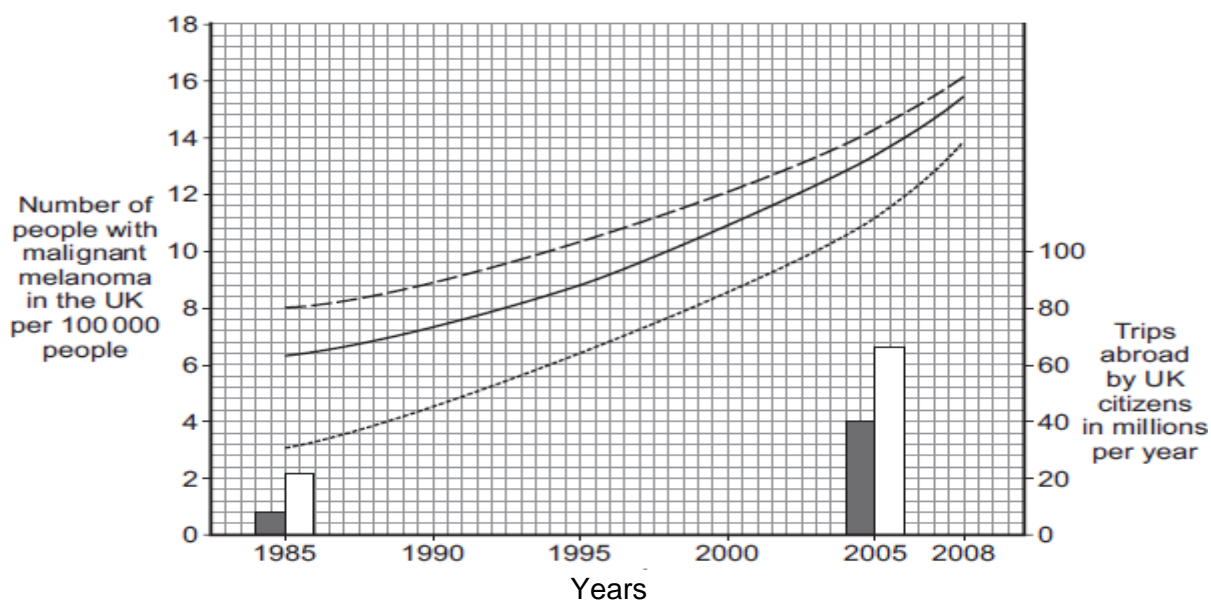
- (b) Describe how some tumours may spread to other parts of the body.

(1)

- (c) People from Northern Europe have fair skin and many people have malignant melanoma skin cancer.

The graph shows how the number of people in the UK with malignant melanoma changed between 1985 and 2008.

The bars on the graph show the number of people in the UK who travelled abroad and the number who took cheap holidays in the sun in 1985 and 2005.



Key			
————	Mean for all areas	<input type="checkbox"/>	Total number of trips abroad
-----	Mean for people from rich areas	<input checked="" type="checkbox"/>	Number of cheap holidays in the sun
-----	Mean for people from poor areas		

- (i) Describe the trends in the number of people with malignant melanoma skin cancer between 1985 and 2008.

(3)

- (ii) Use the data about the number of trips abroad to suggest an explanation for the trends you have described in part (c)(i).

(2)

(Total 8 marks)

Q5.

Being overweight can affect the health and life expectancy of a person.

- (a) Give **one** disease related to being overweight.

(1)

- (b) Body mass index (BMI) helps to show if a person has a healthy body mass for their height.

BMI is calculated using the equation:

$$\text{BMI} = \frac{\text{body mass in kg}}{(\text{height in m})^2}$$

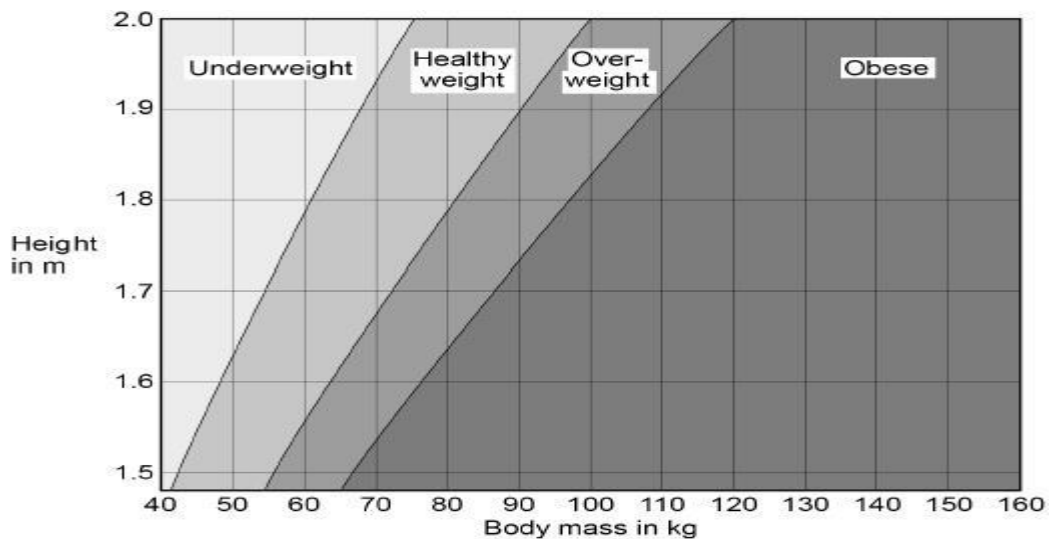
A woman has a BMI of 27 and a body mass of 68.1 kg

Calculate the woman's height in metres.

Height = _____ m

(3)

- (c) The graph below shows a height-body mass chart for adults.



Which weight category describes the woman in part (b)?

Tick (✓) **one** box.

Underweight

Healthy weight

Overweight

Obese

(1)

(d) People are encouraged to control their body mass with diet and exercise.

Describe how the balance between the mass of food eaten and the amount of exercise a person does controls body mass.

(3)

(e) During long periods of vigorous exercise the body respire anaerobically.

Explain the changes that happen in the body during **and** after vigorous exercise.

(6)
(Total 14 marks)

Mark schemes

Q1.

- (a) mitosis
extra box ticked negates mark 1
- (b) cell division is uncontrolled
extra box ticked negates mark 1
- (c) any **one** from:
- smoking / tar
 - alcohol
 - carcinogens
allow named chemical
 - viruses (living in cells)
 - (ionising) radiation
accept UV / X-rays / gamma waves
- 1
- (d) bar plotted at 78%
ignore width of bar 1
- (e) testicular
extra box ticked negates mark 1
- (f) prostate
extra box ticked negates mark 1
- (g) any **two** from:
- improved treatment / drugs
 - earlier diagnosis
 - more cancer screening
 - improved patient knowledge (of risk factors)
allow improved patient diet / lifestyle
- 2

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Q2.

- (a) any **one** from:
- (lung) cancer
 - lung disease
allow correct named cancer
allow correct named disease eg asthma
- 1
- (b) any **two** from:

<ul style="list-style-type: none"> • reduce fat in diet <i>ignore healthy / balanced diet unqualified</i> <i>allow eat less fatty foods</i> <i>allow eat foods without / low in fat</i> • reduce cholesterol in diet <i>allow eat foods without / low in cholesterol</i> • eat less sugary foods <i>allow eat foods without / low in sugars</i> <i>allow eat a high fibre diet</i> <i>allow reduce salt</i> • take regular exercise • reduce alcohol intake <i>allow keep a healthy weight</i> <i>allow take statins</i> <i>allow reduce stress</i> 	2
(c) reduced / restricted blood flow <i>ignore reference to blood pressure</i> <i>allow blood flow stopped</i>	1
(so) less oxygen getting to heart (muscle / cells)	1
(so) less (aerobic) respiration or (so) less energy released <i>do not accept less anaerobic respiration</i> <i>do not accept less energy produced / made</i>	1
	[6]

Q3.

Level 3: Relevant points (reasons / causes) are identified, given in detail and logically linked to form a clear account.	5-6
Level 2: Relevant points (reasons / causes) are identified, and there are attempts at logical linking. The resulting account is not fully clear.	3-4
Level 1: Points are identified and stated simply, but their relevance is not clear and there is no attempt at logical linking.	1-2
No relevant content	0

Indicative content

(stopping smoking will improve health because):

- smoking is a risk factor for cardiovascular disease
- raises blood pressure
- increases cholesterol and / or lowers HDL
- increases atherosclerosis **or** thickened artery walls
- increases the risk of blood clots forming
- increases risk of stroke

- smoking is a risk factor for lung cancer
- as it can cause mutations
- caused by carcinogenic chemicals in smoke (tar)
- leading to uncontrolled growth of cells

- smoking damages alveoli
- causing the surface area of the alveoli to decrease
- causes emphysema / COPD
- causes shortness of breath **or** reduces gas exchange

- chemicals / tar / nicotine in the smoke irritate / inflame the bronchi / lung / bronchioles
- which damage the cilia
- causes goblet cells to secrete more mucus
- causes shortness of breath **or** reduces gas exchange
- causing chronic bronchitis **or** increases risk of infections

- carbon monoxide is produced
- which is toxic / poisonous
- binds / attaches to haemoglobin / Hb
- so oxygen carrying capacity of blood is decreased

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Higher Questions Mark Scheme

Q4.

- (a) (i) (as a result of) uncontrolled / abnormal growth / division of cells
ignore mutation
allow cells dividing with no contact inhibition 1
- (ii) benign tumours do not invade / spread to other tissues / do not form secondary tumours
accept converse for malignant
accept benign tumours do not metastasise 1
- (b) via the blood / circulatory system
accept via lymphatic system 1
- (c) (i) incidence is increasing 1

more rapidly (over the years)

ignore figures

1

difference between rich and poor areas is getting less

or

the incidence is rising fastest in people from poor areas
accept converse for people from rich areas

1

- (ii) risk factor is UV from sunlight
ignore ionising radiation

1

more UK citizens going abroad or taking holidays in the Sun

or

poorer people can afford holidays in the Sun

or

more poorer people are taking holidays in the Sun

1

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Q5.

- (a) any **one** from:

- (Type 2) diabetes
ignore obesity
*do **not** accept Type 1 diabetes allow cardiovascular disease ignore heart attack / failure*
- (coronary / ischaemic) heart disease / CHD
- high blood pressure
- cancer
- depression
allow (osteo)arthritis

1

- (b)

$$27 = \frac{68.1}{\text{height}^2}$$

1

$$\text{height}^2 = 68.1 \div 27$$

or

$$\text{height}^2 = 2.522(r) / 2.52 / 2.5$$

$$\text{allow height} = \sqrt{\frac{68.1}{27}}$$

or

$$\text{allow height} = \sqrt{2.522(r)}$$

1

height = 1.59 (m) allow height =

allow a correctly rounded value

if 2.5 is given in step 2 allow an answer of 1.58 (m)

1

(c) overweight

answer must be consistent with height calculated in (b)

1

(d) any **three** from:

*max 2 marks if refer to energy being made / used / produced / created
allow reference to calories / joules for energy*

- increased energy intake if more food eaten
*allow increased energy intake if more fat / carbohydrate eaten
allow converse
allow energy taken in when you eat*
- if exercise more, more energy is transferred / released
*allow if exercise more, respiration / metabolism increases **or** is faster
allow converse
allow energy is transferred during exercise
do **not** accept energy is burnt during exercise*
- if more energy is taken in than is transferred body mass increases
or
if less energy is taken in than is transferred body mass decreases
*allow if less energy is transferred than is taken in
body mass increases
or
if more energy is transferred than is taken in
body mass decreases*
- if energy intake = energy transferred body mass stays the same
*if no marks are awarded allow 1 mark for food eaten can increase body mass **and** exercise can decrease body mass
or
allow 1 mark for if a lot of food is eaten **and** little exercise is done body mass increases
allow converse*

3

(e) **Level 3:** Relevant points (reasons/causes) are identified, given in detail and logically linked to form a clear account.

5-6

Level 2: Relevant points (reasons/causes) are identified, and there are attempts at

logical linking. The resulting account is not fully clear.

3-4

Level 1: Points are identified and stated simply, but their relevance is not clear and there is no attempt at logical linking.

1-2

No relevant content

0

Indicative content

During exercise:

- increased breathing rate
- increased breath volume
- (to) take in more oxygen for (aerobic) respiration
- (and) exhale more carbon dioxide
- increased heart rate
- (so) increased blood flow (to muscles)
- (to) transport oxygen / glucose to respiring cells faster
- (and) increase rate of carbon dioxide removal
- glycogen converted to glucose

- insufficient oxygen supplied (during prolonged vigorous exercise)
- (so) lactic acid is formed (during anaerobic respiration)
- (and) an oxygen debt is created
- (lactic acid causes) muscles become fatigued / tired **or** (causes) muscles to stop contracting efficiently
- allow reference to sweating **or** increased body temperature **or** vasodilation (during or after exercise)

After exercise:

- heart rate remains high **or** heart rate slowly decreases
- continue to breathe rapidly **or** breathing rate slowly decreases
- (to) pay back oxygen debt
- oxygen debt is the amount of oxygen needed to break down lactic acid
- (and to) provide more oxygen to react with the lactic acid and remove it from cells
- (some) lactic acid transported to liver
- (lactic acid) is converted back into glucose

For Level 3 need reference to:

- changes during **and** after exercise
- lactic acid **and** its removal.

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