



# **KS3 Science**

## **Disease**

### **Mark Scheme**

**Time available: 44 minutes**

**Marks available: 59 marks**

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## Mark schemes

1.

- (a) • genetic material **or** genes **or** DNA

*accept 'nucleus'*

*accept 'chromosomes'*

1 (L7)

**each method of prevention must be related to the method of spread for a mark**

the method of spread **and** prevention are required for each mark

the same prevention method cannot be used for both methods of spread

- (b) **method**

- touch **or** contact

**prevention**

any **one** from

- wash hands before **or** after touching a patient  
**or** before **or** after touching surfaces **or** articles

*accept 'quarantine patients suspected of carrying disease'*

- use alcohol rub when entering **or** leaving ward  
**or** room **or** hospital

*accept 'change gloves between patients'*

*accept 'stop contact with others' **or** 'limit visitors'*

*'cleaning' **or** 'washing hands' are insufficient*

*'wearing gloves' is insufficient*

1 (L7)

**method**

- coughing **or** sneezing

*accept 'through the air' **or** 'breathing on someone'*

**prevention**

- cover mouth **or** nose **or** use a handkerchief **or**  
wear a mask disease'

*accept 'quarantine patients suspected of carrying*

*accept 'stop contact with others' **or** 'limit visitors'*

1 (L7)

(c) any **three** from

- vaccine contains a dead **or** weakened form of the bacterium **or** virus  
*accept 'inject with protein from the bacterium **or** virus'  
'it contains a small amount of bacteria **or** virus' is insufficient*
- antibodies **or** antitoxins (are produced)
- (made by) white blood cells  
*accept 'white cells'*
- further infections are prevented **or** bacteria **or** viruses **or** toxins are destroyed  
*accept 'kills the bacteria **or** viruses'  
'stop you getting it again' is insufficient  
'fights bacteria' is insufficient  
'you become immune to the disease' is insufficient  
as it is given in the question*

3 (L7)

[6]

2.

(a) **one conclusion should relate to the number of cigarettes and the other to the effect of age**

- the more cigarettes smoked, the greater the number **or** percentage that die  
*accept 'smoking 5 cigarettes a day is less harmful than smoking 20'  
statements that do not make a generalisation, such as  
'nearly 1% of men aged 55 – 64 who smoke 20 cigarettes a day will die of heart disease' are insufficient*
- the risk increases with age **or** is greater in older men  
*accept statements such as '20 cigarettes a day is worse when you are 45 – 64 than under 45'  
accept the converse*

1 (L7)

1 (L7)

(b) any **three** from

- it causes a blood clot
- the arteries become narrower **or** blocked **or** less **or** no blood to heart (muscle)  
*accept 'fat clogs the arteries'*
- less **or** no oxygen to the heart (muscle)
- less **or** no food **or** glucose **or** nutrients **or** minerals to the heart (muscle)  
*accept, for one mark, 'the heart muscle needs oxygen **or** glucose to work properly' even though it does not include a comparison*  
*'the heart muscle cannot work properly' is insufficient as it is given in the question*
- less **or** no carbon dioxide **or** waste removed
- may cause a heart attack  
*accept 'it may raise the blood pressure'*
- cells cannot respire (properly)

3 (L7)

(c) (i) • *mucus* traps bacteria **or** dust **or** particles  
*'cell produces mucus' is insufficient*

1 (L7)

- *cilia* move the mucus (towards the throat)  
*accept 'cilia remove bacteria **or** dust **or** particles'*

1 (L7)

(ii) • it paralyses them **or** they stop moving  
*accept 'it clogs the cilia'*  
*accept 'they stick together'*  
*do **not** accept 'it kills **or** burns cilia'*  
*'damages **or** removes cilia' is insufficient*

1 (L7)

[8]

3.

(a) (i) **Award a mark for an answer that shows that maggots will only be found in meat that flies have had contact with, for example:**  
any **one** from

- there were no maggots in container 2
- there were no maggots in container 3
- there were only maggots on the meat in container 1 **or** in the container that was open
- the meat the flies could not reach had no maggots in  
*accept 'when the meat is sealed there are no maggots'*
- there are maggots on the mesh but not on the meat  
*'there are maggots on the mesh' is insufficient*

1 (L6)

(ii) **Award a mark for an answer that shows that contact with air is not sufficient for maggots to develop, for example:**  
any **one** from

- there were maggots in container 1 but no maggots in container 2 **or** 3  
*accept 'there were no maggots in container 2 or 3'*
- air could get into container 3
- there is air in container 2  
*accept 'there would have been maggots in all of them'*

1 (L7)

(b) any **one** from

- they had no food
- they starved **or** died  
*accept 'maggots could not get to the food'*  
*accept 'maggots could not eat the meat'*  
*'maggots could not get to the meat' is insufficient*

1 (L7)

(c) any **two** from

- flies or insects cannot reach the meat
- too cold for bacteria **or** fungi to multiply  
**or** bacteria multiply more slowly  
*accept 'microbes grow more slowly'*  
*do not accept 'it kills bacteria' or 'stops the growth of bacteria'*  
*do not accept 'it is too cold or too cool' without qualification*
- prevents meat rotting  
*accept 'keeps the meat or food fresh' or 'so it does not go off'*  
*or 'too cold for enzymes to work' accept 'eggs or maggots grow more slowly'*  
*do not accept 'maggots are killed by the cold'*

2 (L7)

[5]

4.

(a) (i) United States

*accept 'US' or 'USA'*  
*accept 'America'*  
*accept lower case letters for 'US'*

1 (L5)

(ii) the less starch eaten, the more people get cancer

*accept the converse*  
*do not accept 'people with cancer eat less starch'*  
*accept 'starch helps to prevent cancer'*  
*accept 'you should eat a lot of starch'*  
*'eat starch' is insufficient*

1 (L5)

(b) (i) • bread ✓

• pasta ✓

*if more than two boxes are ticked,*  
*deduct one mark for each incorrect tick*  
*minimum mark zero*

1 (L6)

(ii) fibre ✓

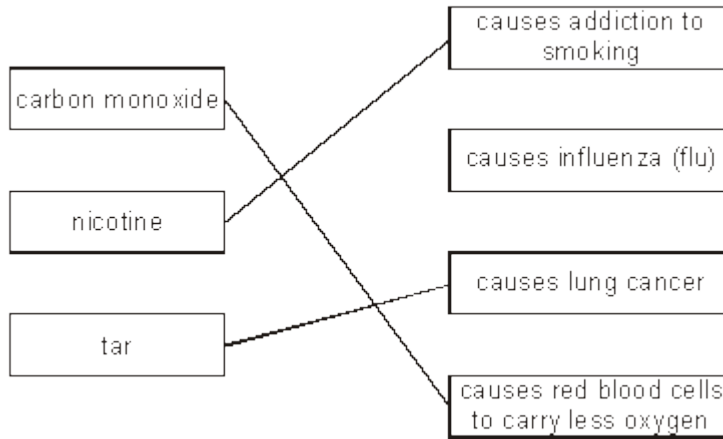
*if more than one box is ticked, award no mark*

1 (L6)

[5]

5.

(a)



*if more than one line is drawn from any substance, award no mark for that substance*

3 (L5)

(b) (i) any **one** from

- fat has been deposited  
*accept 'fat'*
- the artery has become narrower  
*accept 'it is blocked'*

1 (L5)

(ii) any **two** from

- less oxygen to the cells or heart muscle  
*accept 'no oxygen'*  
*do **not** accept 'less air to the cells'*
- less glucose to the cells **or** heart muscle  
*accept 'no glucose'*
- less blood to the cells **or** heart muscle  
*accept 'it stops the circulation of blood'*  
*accept 'blood cannot flow through'*  
*accept 'it stops blood getting to the heart'*  
*'nothing can get through' is insufficient*  
*accept 'there is a build-up of carbon dioxide'*  
*accept for two marks 'they get less oxygenated blood'*

2 (L6)

[6]

6.

(a) (i) 1950 and 1955

***both** dates are required for the mark*  
*accept the dates in reverse order*  
*accept '1945 and 1955'*  
*do **not** accept '1945 and 1950'*

1 (L6)

(ii) tar

*accept a named recognised carcinogen*

*accept 'carbon particles'*

*do **not** accept 'nicotine' or 'carbon monoxide'*

*if both tar and nicotine are given award no mark*

1 (L6)

(b) any **one** from

- immunisation

*accept 'inoculation'*

- vaccination

*do **not** accept 'injection'*

- BCG

*accept 'TB jab'*

- BCG injection

*do **not** accept 'jab'*

- BCG jab

*do **not** accept 'shot'*

- BCG shot

*do **not** accept 'medicine'*

1 (L6)

[3]

7.

(a) any **two** from

- they contain weakened viruses

- the body makes antibodies

*accept 'the body makes antitoxins'*

- antibodies kill **or** destroy healthy viruses

*accept 'antibodies destroy new infections'*

2

(b) any **one** from

- it does not produce the right antibodies

*accept 'it makes the wrong antibodies'*

- antibodies only kill one type of virus

- antibodies only work on the right proteins

*accept 'the old antibodies do not recognise the new viruses'*

*do **not** accept 'vaccines only work on one type of virus'*

1

[3]



8.

(a) (i) accept any number from 38 to 47 minutes

1 (L7)

(ii) any **one** from

- the body gets used to the nicotine  
*accept 'he gets used to it'*  
*accept 'his body will adapt to the nicotine'*
- more nicotine is needed to get the same effect  
*accept 'more nicotine is needed'*
- the body develops tolerance

1 (L7)

(b) **The first mark is for a consequence. The second mark is for an explanation.**  
**Examples are**

**either**

- people will smoke more
- to maintain the nicotine level in their blood above the craving threshold  
*accept 'cigarette companies will make more money'*

1 (L7)

1 (L7)

**or**

- increased risk of lung cancer **or** other smoking-related disease
- more cigarettes will be smoked

1 (L7)

1 (L7)

**or**

- people will smoke fewer cigarettes
- lower nicotine level causes less addiction

1 (L7)

1 (L7)

(c) any **one** from

- less oxygen in the mother's blood  
*do **not** accept 'no oxygen'*
- less oxygen passes through the placenta  
*do **not** accept 'only carbon dioxide passes through the placenta'*
- less oxygen in the baby's blood  
*accept 'less oxygen for the baby'*  
*accept 'the red blood cells of the baby*  
***or** foetus will combine with carbon monoxide'*  
*'carbon monoxide passes through the placenta' is insufficient*
- smaller baby **or** brain damaged baby
- baby may be premature  
*accept 'baby's heart beat rises' or 'baby's blood pressure goes up'*

1 (L7)

[5]

9.

(a) any **one** from

- there were not enough bacteria in the food **or** body  
*accept 'the bacteria had to grow first'*
- the bacteria multiplied by the next day

1 (L6)

(b) the antibiotic **or** medicine killed all the bacteria

*accept 'the antibiotics got rid of all the bacteria'*  
***or** 'there were no bacteria left'*

1 (L5)

(c) any **one** from

- antibiotic **or** medicine had not killed all the bacteria  
*accept 'not all the bacteria had gone'*
- there were still bacteria left alive
- the bacteria multiplied  
*accept 'the population rose again'*  
*accept 'they could grow again'*  
*accept 'they reproduced again'*

1 (L6)

1 (L6)

(d) any **one** from

- it slows down reproduction  
*accept 'it stops them reproducing'*  
**or** *'it stops them breeding'* **or** *'it stops them multiplying'*
- it is too cold for the bacteria to divide **or** reproduce  
*accept 'it stops them growing'*  
*accept 'slows down growth'*  
*do not accept 'they are dormant'*  
*do not accept 'it freezes them'*

1 (L6)

[5]

10.

(a) stomach *and* intestine

*answers may be in either order*  
*both answers are required for the mark*  
*accept 'oesophagus' or 'gullet'*

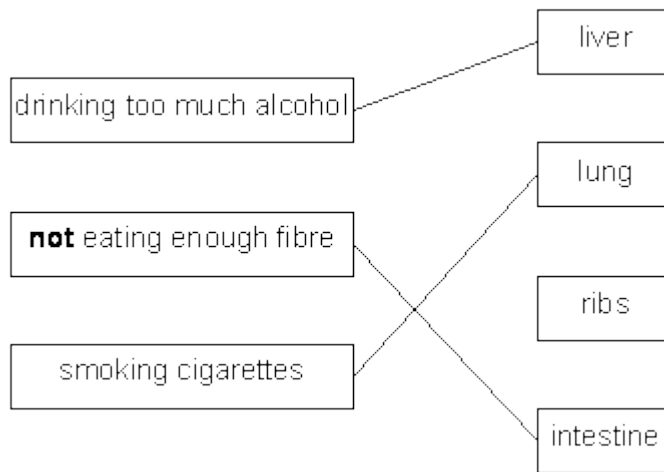
1 (L4)

(b) any **two** from

- to make it easy to swallow  
*accept 'so that it will go down easily'*  
*accept 'to stop you choking'*
- to digest food or break it down  
*accept 'to break it into smaller pieces'*
- to soften the food  
*accept 'it dissolves it'*

2 (L4)

(c) (i)



*award one mark for each correct line*  
*if more than one line is drawn from any habit,*  
*award no mark for that habit*

3 (L3)

(ii) heart ✓

*if more than one box is ticked, award no mark*

1 (L4)

[7]

11.

(a) any **one** from

- for transport **or** for blood **or** plasma  
*accept 'it stops cells becoming dehydrated'*  
*'it stops the body becoming dehydrated'*  
**or** *'it keeps us hydrated' are insufficient*
- it is needed for sweat **or** for cooling
- for tears
- it is a solvent
- for getting rid of waste
- it is needed for gas exchange
- it is a lubricant
- it is part of the cytoplasm  
*accept 'allows chemical reactions to take place'*  
*accept 'for digestion'*

1 (L7)

(b) any **two** from

- white blood cells
- (produce) antibodies **or** antitoxins
- prevent further infections **or** destroy the toxin **or** poison  
*accept 'destroy **or** kill the bacteria'*

2 (L7)

(c) (i) any **one** from

- so that the patient does not get cholera  
*accept 'the person might die'*
- so the poison does not prevent the large intestine from absorbing water  
*accept 'intestine' for large intestine*  
*do **not** accept 'small intestine'*

1 (L7)

(ii) any **one** from

- no need for injections
- some people are afraid of needles  
*accept 'it does not hurt'*
- less **or** no risk of infection  
*do **not** accept 'so they can be vaccinated against several diseases'*

1 (L7)

[5]