Mark schemes

(a) any two from:

ignore eating disorder
ignore cancer

• arthritis
accept worn joints

• diabetes
accept high blood sugar

• high blood pressure
ignore cholesterol

• heart disease / heart condition / heart attack / blood vessel disease
allow blood clots / strokes

(b) (i) \( \frac{1}{4} \) or 0.25 or 25%

correct answer gains 2 marks
if answer incorrect, evidence of \( \frac{1500}{6000} \) gains 1 mark
25 without % gains 1 mark

(ii) majority / most / high proportion of people in trial lost mass / weight
ignore good results / it worked

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[5]
(a) A

Tests including a placebo

Tests using very small ...

Tests on animals

B

Used to find whether the drug is toxic

The first stage in the clinical trials of the drug

Used to find the optimum dose of the drug

Used to prove that the drug is effective on humans

1 mark for each correct line
mark each line from left hand box
two lines from left hand box cancels mark for that box
Students have been informed that the headline is not justified

- reference to reliability, eg only a small number of mice tested
  - or trial too short
  - or investigation not repeated

- reference to control, eg mice given caffeine not coffee
  - or 6 cups (equivalence) is more than 1 dose

- (and) the effect on mice might not be same as on humans
  - allow only tested on mice

- (also) text suggests that the treatment improves memory loss (rather than delays it)
  - accept text suggests disease cured
  - or mice already have memory loss or experiment only showed improvement in memory
  - or does not show delays Alzheimer’s
  - or experiment not done on old mice
  - allow reference to the fact that mice engineered to have it

(a) 18.06 / 18 / 18.1

- correct answer gains 2 marks
  - if answer incorrect evidence of
  - \((4131 - 3499) ÷ 3499 \times 100\)
  - or \(632 ÷ 3499 \times 100\)
  - or \(((4131 ÷ 3499) \times 100) - 100\)
  - or 0.18
  - gains 1 mark

(b) antibiotics kill non-resistant strain
  - or resistant strain bacteria survive
  - accept resistant strain the successful competitor
  - do not accept intentional adaptation
  - ignore strongest / fittest survive
  - ignore mutation
  - ignore people do not finish antibiotic course

- resistant strain bacteria reproduce
  - or resistant strain bacteria pass on genes
population of resistant strain increases **or** proportion of resistant bacteria increases  
*allow high numbers of resistant bacteria*

**or**  
people more **likely** to be infected by resistant strain (than non-resistant strain)

| (a) | kills / destroys bacteria / MRSA  
*do not allow germs* |
|-----|------------------|
|     | prevents / reduces transfer  
*allow stops MRSA entering ward* |
| (b) | mutation  
*do not accept antibiotics causes mutation* |
|     | (causes) resistance  
*allow not effective*  
*ignore immunity* |
|     | to **antibiotics** |

| (wbc) ingest / digest pathogens / bacteria / viruses  
*allow eat germs*  
*ignore swallow germs*  
*ignore ingest the disease*  
*ignore attack / kill the disease* |
| (wbc) produce antibodies |
| (wbc) produce antitoxins |
any one from:

• (antibodies) destroy or kill pathogens / bacteria / viruses / germs
  
  ignore destroy / kill disease
  
  ignore attack / fight pathogens

• (antitoxins) counteract / destroy / neutralise toxins / poisons
  
  ignore attack / killing toxins

• reasonable reference to memory cells or rapid production of antibodies upon re-infection

(a) testing for toxicity / see if it is safe / see if it is dangerous / to see if it works
  
  ignore side effects unqualified

(b) (i) testing for side effects / testing for reactions (to drug)
  
  ignore to see if it works
  
  do not accept dosage

(ii) any one from
  
  ignore immune system

  • dose too low to help patient
  
  • higher risk for patient
  
  • might conflict with patient’s treatment / patient on other drug
  
  • effect might be masked by patient’s symptoms / side effects clearer

(c) to find optimum dose
  
  allow testing on larger sample or it makes results more reliable
  
  allow to find out if drug is effective / find out if drug works on ill people (not just if drug works)

(d) (i) (tablet / drug / injection) that does not contain drug
  
  allow control / fake / false
  
  allow tablet / injection that does not affect body
  
  do not accept drug that does not affect body
(ii) neither patients nor doctors

(a) produces toxins / damage cells / reproduce rapidly or reproduce in cells
   ignore invade cells

(b) any three from:
   • TV crew immune / Indians not immune / Indians have weak(er) immune system
      ignore resistant
   • TV crew had / produced antibodies / Indians had no antibodies or antibody production faster in TV crew
   • TV crew had previous exposure to flu / had been vaccinated or
     Indian tribe had no previous exposure to flu / had not been vaccinated
      allow immunised
   • Indians caught disease from TV crew or
     TV crew were carriers (of the virus)

(a) any two from:
   • arthritis
     allow damaged joints
   • diabetes
     accept high blood sugar
   • high blood pressure
   • strokes
     allow blocked blood vessels / thrombosis
   • allow breathing difficulties
     ignore cancer
     ignore high cholesterol
(b) (i) any two from:

* to gain marks there must be a comparison
* ignore comparison at single age

- lower number of women deaths up to age of 75-80
- higher number of women deaths after 80
  * ignore women die older or men die younger

- men's peak higher
- men's peak at an earlier age
- men's death start earlier than women
- more men than women die of heart disease

(ii) any two from:

- men smoke more (cigarettes)
  * ignore alcohol
- more men smoke
- men under more stress
- men less active
- more men overweight / eat more / less diet conscious or different fat distribution
  * ignore reference to body size

- genetic factors
- men might have lower metabolic rate
  * ignore references to hormones
- men less likely to visit doctor even though they have symptoms

(c) points can be in any order

* laboratory tests / tests on tissues
  * or
  * tests on animals
  * or
  * tests for toxicity
    * ignore computer simulations

* tests for side effects on volunteers / healthy people / small numbers
widespread testing
or
testing for optimum dose
or
test on patients / sick people
or
test to see if it is effective
   accept use of placebo

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(a) antibodies
   allow antitoxins / memory cells
   do not allow antigens
   immune
   ignore protection
   allow resistant

(b) (i) fell
   numerical qualification to zero / nothing / by 100%
   allow stopped in 1995

(ii) (no)
   ignore circle

% vaccination fell or when no vaccination
but autism numbers did not fall / stayed high / increased
or
‘(yes) might support if time lag between vaccination and autism
symptoms’ / ‘time lag for diagnosis’ (1)
6 year time lag quantified (1)
(a)  
(i)  12

**correct answer with or without working**

*if answer incorrect evidence of (number of deaths) × 6 or 2 seen*

**gains 1 mark**

(ii) (ward 2)

more deaths / infections on ward 1

or

less deaths / infections on ward 2

(b)  
(i)  **both** bars correctly plotted

*ie plots in spaces between 2.8 and 3.2 and 0.8 and 1.2*

*ignore width and shading*

(ii) less deaths / infections

(iii) bacteria / germs / microbes / infection killed / washed off

**accept less infections passed on**

[6]