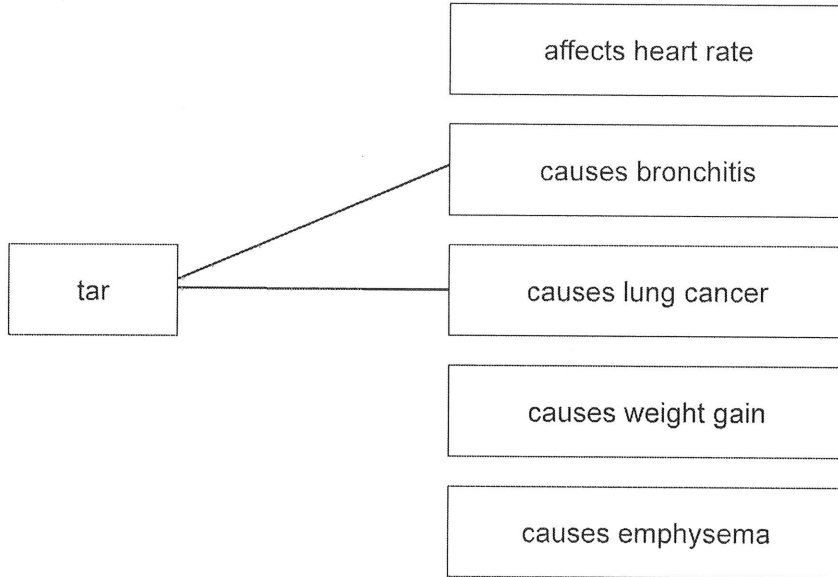


B2.6 Health, Disease, Defense Mechanisms & Treatments

1. (a)



(A)

(b) (i) nicotine

(ii) carbon monoxide/CO

[2]

[1]

[1]

AVAILABLE MARKS

4

2.

(a) Bacteria – Salmonella;
Virus – Mumps;
Fungus – Athlete's foot
All 3 correct = [2]
1 correct = [1]

(b) Salmonella;

(c) Bacteria;

(d) Wear flip-flops/dry feet properly;

(B)

[2]

[1]

[1]

[1]

AVAILABLE MARKS

5

3.

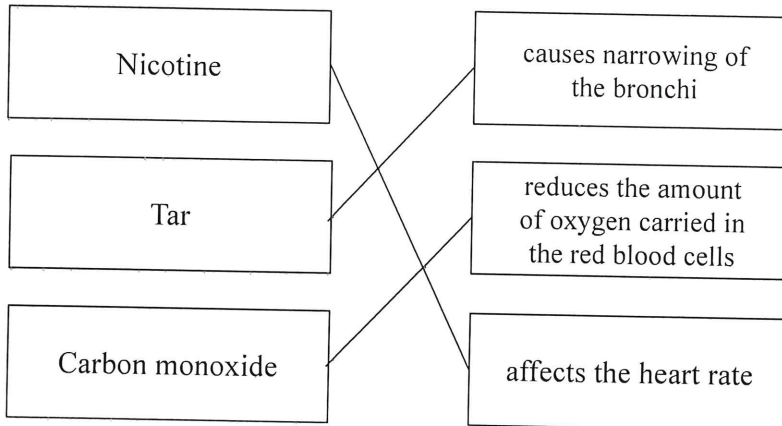
(a)

Substances in cigarette smoke

Effect on the body

(C)

AVAILABLE MARKS



1 correct = [1]

All three correct = [2]

[2]

(b) (i) Less adults smoking/decreased/the % of adults smoking decreased;
The number of cases of lung cancer decreased;
More smokers = more cases of lung cancer;
Both lines decrease = [1]

(D)

[2]

(ii) Smoking ban in public places/labelling on cigarette packets/ban on advertising/TV/sport venues/age limit to buy cigarettes/proving age to buy cigarettes/cigarettes not on display;

[1]

(iii) Tar;

[1]

(c) An individual's health – damage to liver/**liver** cancer/cirrhosis/depression;

(E)

Society – cost to NHS/family conflict/violence/unwanted pregnancies/money spent to educate/treat people/working days lost/anti-social behaviour/vandalism/extra policing;

[2]

(d) (i) She drinks **more** than the recommended **daily allowance**/she drinks **8.8 units**; at **one time** (on one night);

[2]

(ii) Any **two** from

- Increase price of alcohol/no special offers/no happy hours;
- More police presence to monitor/check IDs
- Education/show effects of drink/adverts
- Bar staff refuse to serve people when they have had too much to drink/stop serving alcohol earlier/close earlier
- Get young people involved in something else/drop-in centres

[2]

4.

(a) Tar;
Nicotine;
Carbon monoxide;

(F)

[3]

(b) Any **two** from:
Tar

- lung cancer/throat cancer/mouth cancer/tongue cancer
- emphysema
- bronchitis

or

Nicotine

- addiction
- irregular/faster heart beat; affected heart rate

or

Carbon monoxide

- combines with red blood cells
- less oxygen carried
- less respiration

No marks for substance on its own

Harmful effects must agree with substance

[2]

(c) Individual: memory loss/addiction/mental health problems.
Society: family breakup/crime/cost of treatment/time off work.

[2]

7

5.

(a) sterilise/kill bacteria/disinfect/destroy micro-organisms

(G)

[1]

(b) microbes/bacteria/fungus/moulds;
can enter/contaminated
from the air

[2]

(c) 1. **sealed** so that bacteria cannot get **out**
2. any pathogens do not grow as well/so that dangerous
organisms can't grow

[2]

5

6.

(a) Use a condom/abstinence/fewer partners/don't share needles/don't use
dirty needles/use sterilised needles;
Athlete's foot;
Bacteria;
Airborne droplet infection/in the air/breathing in/airborne/sneezing/
coughing;

(J)

[4]

(b) Blood clotting = prevents microorganisms from entering a cut;
(Ignore blood loss)
Mucous membrane = **traps** microbes/microbes stick to/in mucus/mucus
catches microbes;
Phagocytosis = engulfs/surrounds; and digests/breaks down
microorganisms;

(K)

[4]

(c) • Antibodies attach to **antigen**;
• because antibodies are specific/fit/match/complementary to A;
• Cause the bacteria (A) to clump together;
• Prevents microorganisms dividing/reproducing/easier for phagocytosis/
moving around the body/immobilises;
• Antibodies not a match/fit/specific to/complementary for antigens
on B;

(L)

Any **four**

[4]

7. (a) (i) years on x-axis; points plotted correctly; points joined straight lines point to point [4]
- (ii) number of people living with AIDS increases with time from 2006 to 2013 [1]
- (b) (i) $2.2 - 1.9 = 0.3 / \frac{1.9}{2.2} / 86.36$;
= 13.64% or 13.6; [2]
- (ii) Any **two** from four
more money spent on treatment/education/research;
more people receiving;
fewer new infections;
more people living with AIDS; [2]
- (c) (i) Jenner [1]
- (ii) smallpox [1]

11

8. no clear area around amoxicillin; clear area around neomycin
Explanation: amoxicillin didn't kill X; X is resistant to amoxicillin
Neomycin kills X; X is not resistant to neomycin

[4]

AVAILABLE MARKS

4

9.

	Patient/s who is/are	Evidence
Male	A;	Testosterone
Most likely to be a smoker	B;	CO/carbon monoxide
Most likely to be receiving IVF treatment	C;	Fertility hormones
Most likely to be a binge drinker	A;	High blood alcohol levels

4

[8]

AVAILABLE MARKS

8

10. Indicative content

V&W

Any **six** from:

- dip/soak a disc in an antibiotic or both discs
- set discs on agar
- incubate/more than 1 day/leave for 24 hrs or more
- at 25°C/less than 25°C/about 25°C
- seal/use sellotape/do not reopen
- autoclave/sterilise after/safe disposal/wipe benches with alcohol/disinfectant (before or after)
- A has a bigger clear area
- A kills **more** bacteria/prevents **more** growth/**more** bacteria destroyed

Response	Mark
Candidates give 5 or 6 points from the indicative content to describe how to set up the Petri dishes and interpret the results and give safety precautions for the investigation. They use good spelling, punctuation and grammar and form and style are of a high standard.	[5]–[6]
Candidates give 3 or 4 points from the indicative content to describe how to set up the agar plates or interpret results or give safety precautions for this investigation.	[3]–[4]
Candidates give 1 or 2 points from the indicative content to describe how to set up the agar plates or interpret results or give safety precautions for this investigation.	[1]–[2]
Response not worthy of credit.	[0]

[6]

6

11. (a) Any **two** from:

- Antibiotics won't be effective/treatment of viral diseases difficult
- Might not be able to get good medical care
- Hard to avoid being bitten
- To provide him with immunity/to get high levels of antibodies

(X)

[2]

(b) (i) 3.8;

(Y)

[1]

(ii) Higher percentage of the population in NI were vaccinated.
Bigger population in England/converse;

[1]

(iii) Jenner; (Old Spec)

[1]

[4]

12.

(a) (i) Bacteria;

Z

[1]

(ii) Bacteria are not killed by antibiotics;

[1]

(b) (i) Health Trust
Western

2010
decreased

2011
increased

2012
decreased

AA

[1]

(ii) Northern;

[1]

(iii) $20 - 4$ or 20 (cases) to 4 (cases)/or reduction of $16 = [1]$
 $= 80\%$

[2]

Correct answer [2]

(iv) Any **two** from:

AB

- pretest patients
- isolation of patients (with MRSA)
- protective clothing when dealing with patients with MRSA/wear gloves/goggles etc
- washing hands between dealing with patients/washing hands **more frequently**
- deep clean wards/sterilising surfaces or equipment/cleaning toilets/floors/hospital/wards more frequently/mop up spills
- use hand sanitiser;

[2]

AVAILABLE MARKS

8

13.

(a) Any **two** from:

AC

- vaginal secretions
- stomach acid
- ear wax
- blood clots (at wound to prevent entry)
- mucous membranes
- tears/lysozymes
- **nasal** hairs
- skin (is physical barrier to entry);

[2]

(b) Any **two** from three:

- **antigens** on microorganism;
- trigger **WBC/lymphocyte**;
- antibodies are complementary in shape to the antigens

[2]

(c) **Steeper** gradient;

higher antibody level (higher than the peak already drawn);
stays high – for longer than original;

AD

[3]

AVAILABLE MARKS

7

14.

(a) Abnormal cell division;

[1]

(b) Indicative content:

- Maximum [2] { 1 Cancer cell larger;
- { 2 Cancer cell larger nucleus;
- { 3 Cancer cell irregular shape;
- Maximum [2] { 4 Not in a capsule;
- { 5 Spreading in blood/lymph;
- { 6 Spread around the body/into other tissues;
- Maximum [2] { 7 Tumour has its own blood supply;
- { 8 To provide cells with food/energy/oxygen;
- { 9 (Cancer cells) continue to divide/grow;

Response	Mark
Candidates must use appropriate, specialist terms throughout using at least FIVE of the above points . They use good spelling, punctuation and grammar and the form and style are of a high standard .	[5]–[6]
Candidates use some appropriate, specialist terms throughout using at least THREE of the above points . They use satisfactory spelling, punctuation and grammar and the form and style are of a satisfactory standard.	[3]–[4]
Candidates make little use of specialist terms throughout to give one of the above points. The spelling, punctuation and grammar, form and style are of a limited standard.	[1]–[2]
Response not worthy of credit.	[0]

[6]

(c) (i) Number of women diagnosed **falls** after screening was introduced in 1988;

[1]

(ii) Early detection; Faster/more effective treatment;

[2]

(iii) Surgery; radiotherapy; chemotherapy;

[3]

(d) Any **two** from
Protection against virus;
before having sexual relationship;
Only girls get cervical cancer;

[2]

15

15.

(a) (i) any antigen labelled

[1]

(ii) antigen/microbe is recognised as **foreign**;
WBC/lymphocytes;
produce antibodies;
antibodies attached to antigen/antibody has a complementary shape [3]

(M)

(iii) stops microbes spreading/stops reproducing
easier phagocytosis

[1]

(b) phagocytosis;
engulf;
digest/(accept destroy **using enzymes**)

[3]

8