

13. The use and abuse of drugs

Content

13.1 Antibiotics

13.2 Effects of heroin

13.3 Effects of alcohol

13.4 Effects of tobacco smoke

Learning outcomes

Candidates should be able to:

(a) define a *drug* as any externally administered substance that modifies or affects chemical reactions in the

body

(b) describe the medicinal use of antibiotics for the treatment of bacterial infection

(c) describe the effects of the abuse of heroin: a powerful depressant, problems of addiction, severe

withdrawal symptoms and associated problems such as crime and infection, e.g. AIDS

(d) describe the effects of excessive consumption of alcohol: reduced self-control, depressant, effect on

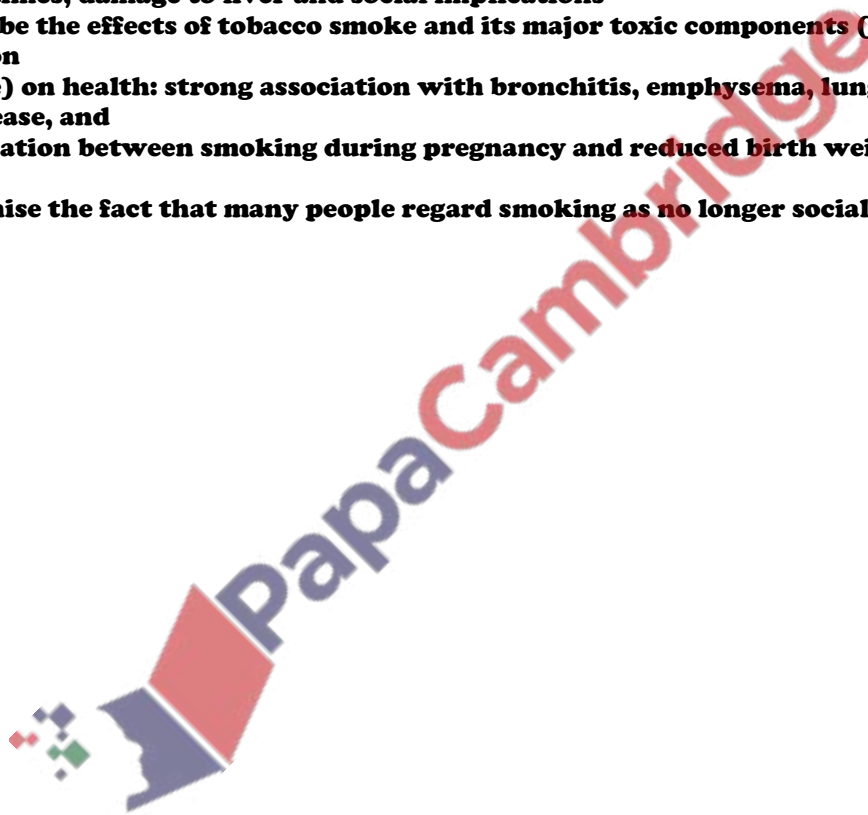
reaction times, damage to liver and social implications

(e) describe the effects of tobacco smoke and its major toxic components (nicotine, tar and carbon

monoxide) on health: strong association with bronchitis, emphysema, lung cancer and heart disease, and

the association between smoking during pregnancy and reduced birth weight of the baby

(f) recognise the fact that many people regard smoking as no longer socially acceptable.



The Use and Abuse of Drugs P2 questions

O/N16/22/Q3

Table 3.1 shows the percentage of smokers in a particular country and the number of deaths from lung cancer in that country during the years 1920 to 2010.

Table 3.1

year	percentage of the population that were smokers	deaths from lung cancer per 100,000 people
1920	30	100
1930	35	150
1940	45	200
1950	60	250
1960	40	550
1970	30	700
1980	25	800
1990	20	700
2000	20	525
2010	18	500

(a) (i) Name the drug in tobacco smoke responsible for addiction.

.....

[1]

(ii) Name a substance in tobacco smoke known to cause cancer.

.....

[1]

(iii) Name a substance in tobacco smoke that affects the carriage of respiratory gases.

.....

[1]



The Use and Abuse of Drugs P2 questions

(iv) Explain why a pregnant woman is advised not to smoke.

.....
.....
.....
.....
.....
.....
..... [3]

(b) Describe and explain the relationship between the number of smokers and the number of deaths from lung cancer shown in Table 3.1.

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
..... [4]

[Total: 10]

The Use and Abuse of Drugs P2 questions

M/J16/21/Q9

(a) Define the term *drug*.

.....
.....
.....
.....
.....
..... [3]

(b) (i) Describe the effects on health of smoking tobacco. In your answer, make reference to the effects of named toxic components of tobacco smoke.

.....
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.....
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.....
.....
.....
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.....
.....
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.....
.....
.....
..... [5]

(ii) Suggest why many people regard smoking tobacco as no longer socially acceptable.

.....
.....
..... [2]

[Total: 10]

The Use and Abuse of Drugs P2 questions

M/J16/22/Q2(b)

1) Every day, babies are born suffering from severe withdrawal symptoms as a result of their mothers taking drugs during pregnancy.

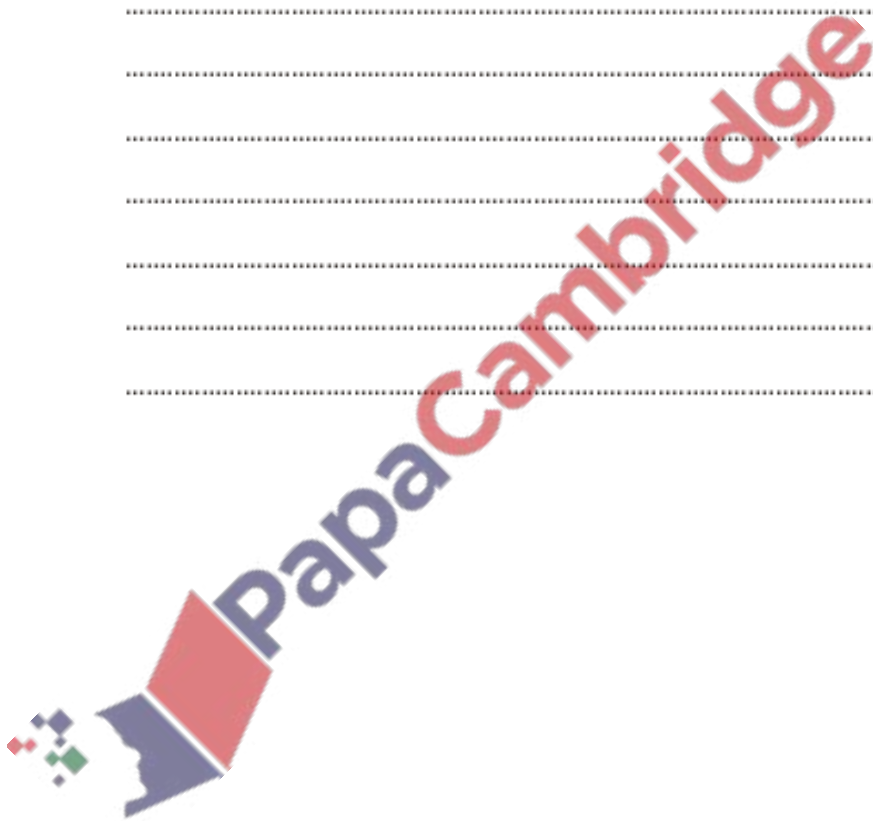
(i) Name a drug which the mother may have taken during pregnancy that might cause these withdrawal symptoms.

..... [1]

(ii) Suggest how drugs taken by the mother have been able to affect her developing fetus.

.....
.....
.....
.....
.....
.....
.....
.....
.....
..... [4]

[Total: 9]



The Use and Abuse of Drugs P2 questions

M/J15/21/Q4

1 (a) Define the term *drug*.

.....

 [2]

(b) Fig. 4.1 shows some of the organs of a person that can be affected by the use of drugs.

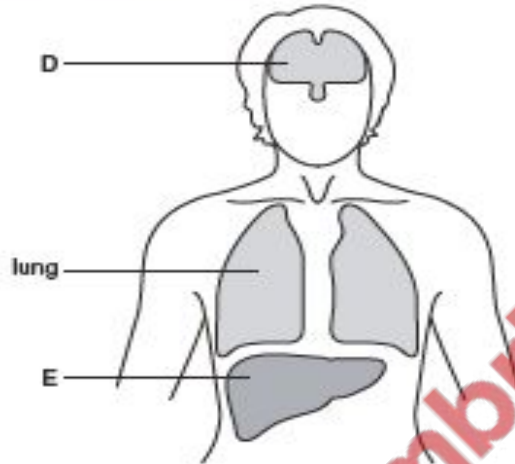


Fig. 4.1

Complete Table 4.1 by naming organs D and E and by giving one effect of each drug on the named organ.

Table 4.1

drug	organ label on Fig. 4.1	name of organ	one effect of drug
heroin	D		
alcohol	E		

[4]

(c) (i) Name two toxic components of tobacco smoke.

1
 2 [2]

(ii) State the likely effect on her baby if a mother smokes tobacco throughout pregnancy.

.....

 [1]

[Total: 9]

The Use and Abuse of Drugs P2 questions

O/N12/22/Q5

The graph in Fig. 5.1 shows the concentration of nicotine in the blood of a person before, during and after smoking a cigarette.

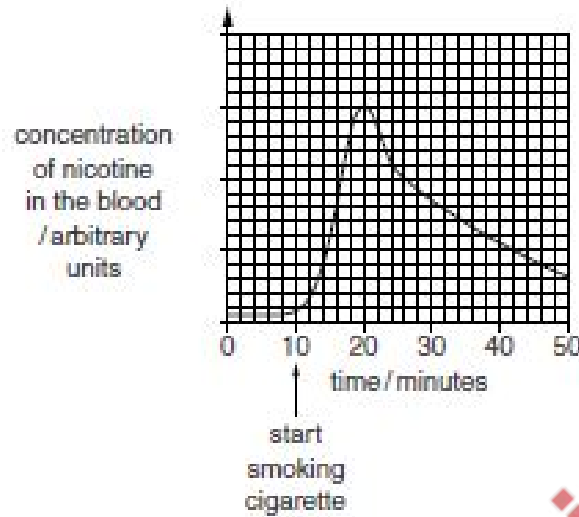


Fig. 5.1

- (a) Use Fig. 5.1 to find the time taken for the person to smoke the cigarette.

[1]

- (b) Suggest why the concentration of nicotine in the person's blood was not zero before starting to smoke the cigarette.

[1]

- (c) Name two components of the cigarette smoke, other than nicotine, that may be harmful to the person. For each component, state the harm that it may cause.

component 1

harm it may cause

component 2

harm it may cause

[4]

The Use and Abuse of Drugs P2 questions

(d) Fig. 5.2 shows the blood pressure of the same person over the same time period.

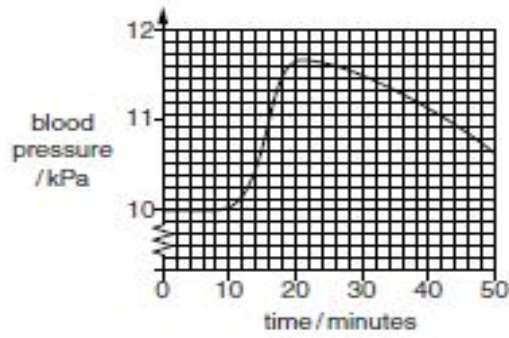


Fig. 5.2

(i) Use Fig. 5.2 to describe the effects of smoking the cigarette on this person's blood pressure.

.....
..... [2]

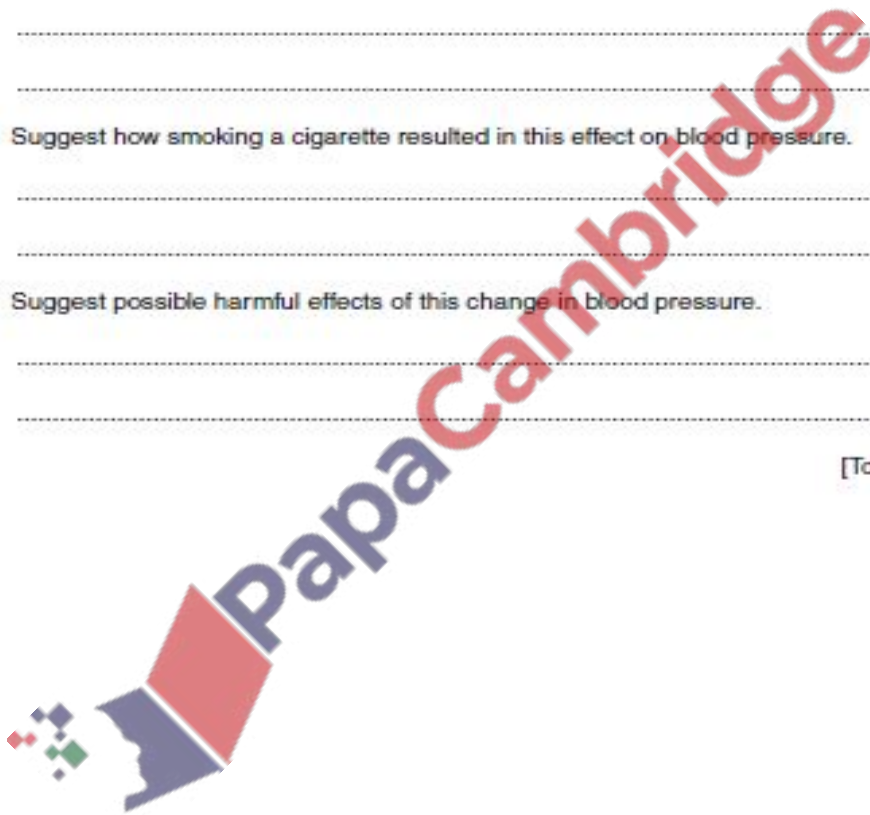
(ii) Suggest how smoking a cigarette resulted in this effect on blood pressure.

.....
..... [1]

(iii) Suggest possible harmful effects of this change in blood pressure.

.....
..... [2]

[Total: 11]



M/J11/21/Q4

Fig. 4.1(a) and Fig. 4.1(b) each shows cells from the lining of the trachea. One is from a smoker and one is from a non-smoker.

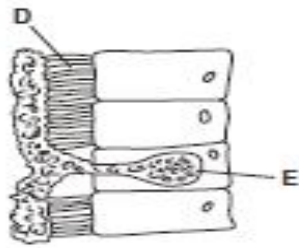


Fig. 4.1(a)

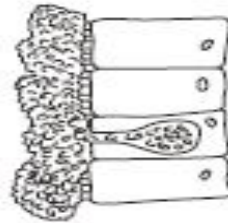


Fig. 4.1(b)

(a) (i) Identify D and E in Fig. 4.1(a).

D

E

[2]

(ii) Describe the function of D.

.....
 [2]

Fig. 4.2(a) and Fig. 4.2(b) show cross-sections through the alveoli of a smoker and of a non-smoker.

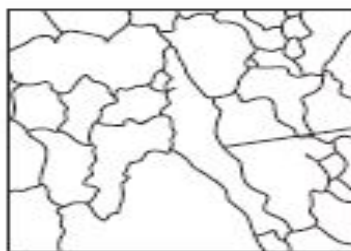


Fig. 4.2(a)



Fig. 4.2(b)

walls of alveoli

(b) (i) Identify the figures on this page that show the trachea and alveoli of the smoker.

Fig. and Fig.

[1]

(ii) Explain how the effect of smoking on the alveoli could affect the general health of a smoker.

.....

 [5]

[Total: 10]

The Use and Abuse of Drugs P2 questions

M/J07/P2/Q8

8 Either (a) Define a *drug*. [2]

(b) Explain the effects of the abuse of:

(i) alcohol, and

(ii) heroin. [8]

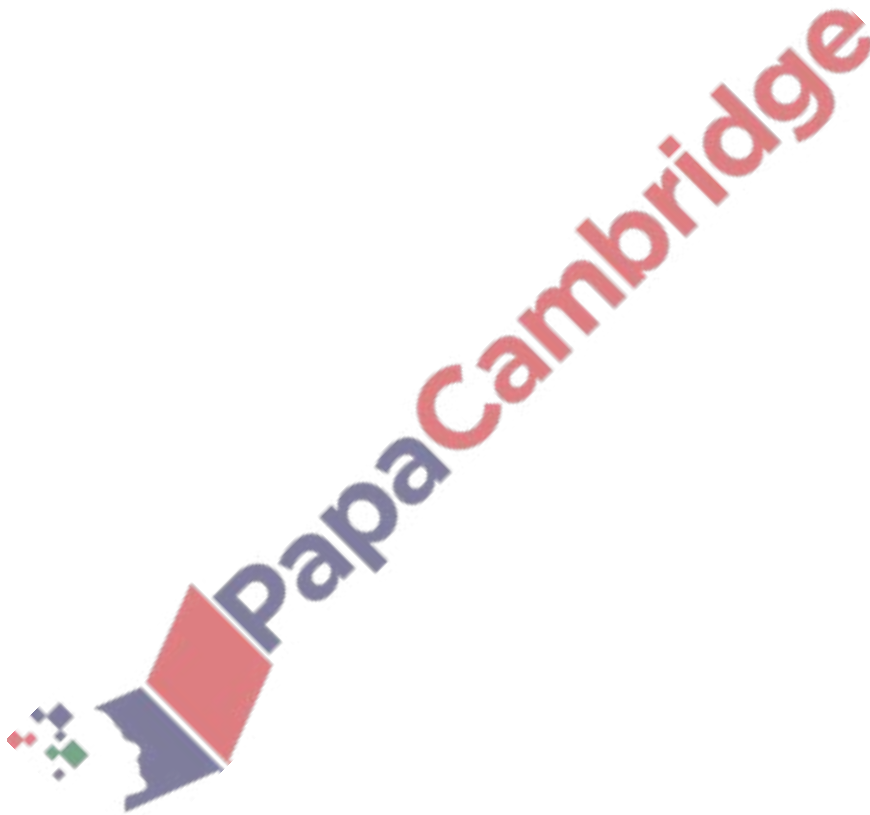
[Total: 10]

8 Or Explain why smoking is no longer regarded as

(a) advisable for the maintenance of good health, [8]

(b) socially acceptable. [2]

[Total: 10]



The Use and Abuse of Drugs P2 questions

Mark schemes will use these abbreviations:

; separates marking points

/ alternatives

() contents of brackets are not required but should be implied

R reject

A accept (for answers correctly cued by the question, or guidance for examiners)

Ig ignore (for incorrect but irrelevant responses)

AW alternative wording (where responses vary more than usual)

AVP alternative valid point (where a greater than usual variety of responses is expected)

ORA or reverse argument

underline actual word underlined must be used by candidate (grammatical variants excepted)

+ statements on both sides of the + are needed for that mark

O/N16/22/Q3

3(a)(i) nicotine ; **1**

3(a)(ii) tar / named carcinogen ; **1 A** any other named carcinogen in tobacco smoke

3(a)(iii) carbon monoxide / CO ; **1**

3(a)(iv) 1 carbon monoxide combining with haemoglobin / nicotine narrows blood vessels ;
2 decreasing O₂ carriage / less O₂ absorption ;
3 substances pass from mother's blood to fetus' blood / reference to substances across placenta ;
4 impaired development / born underweight / stunted growth / damage to brain / stillbirth / premature birth ;

3

3(b) 1 both rise + until 1950 ;

2 people unaware of the link / education **AW** ;

3 1950 / 60 – 1980 + fall in smoking + continued rise in deaths ;

4 cancer can take a long time to develop **AW** ;

5 due to passive smoking / cancer caused by other factors ;

6 since 1980 + both falling ;

7 better diagnosis / treatment / drugs ;

8 low tar cigarettes / better filters / e-cigarettes ;

Total 10

M/J16/21/Q9

9 (a) externally administered ;

substance / chemical ;

(that) modifies / affects

/ changes ;

(the) chemical reactions (in the body) ;

[max 3]

(b) (i) nicotine ;

addictive ;

The Use and Abuse of Drugs P2 questions

carbon monoxide ;
reduced oxygen carrying
capacity of blood ;
reference to underweight babies
AW ;
tar ;
cough / emphysema / bronchitis ;
explanation of mechanism of
one of the above e.g. cilia
damaged / alveoli
damaged / mucous lining
blocked by tar ;
correctly named cancer (e.g.
lung / throat) ;
reference to cardiovascular
disease / increases blood
pressure ;
[max 5]
(ii) passive smoking or described
e.g. effect on
asthmatics / concerns around
smoking near children / pregnant
mothers ;
reference to unpleasant
odour / clothes smell ;
reference to high cost ;
[max 2]
[Total: 10]

M/J16/22/Q2(b)

(b) (i) heroin / alcohol / nicotine / named
addictive drug ;
[1]
(ii) 1g reference to named drug /
substance (e.g. CO, tar)
mother's blood ;
diffusion ;
across or through placenta ;
fetus / baby / embryo + blood ;
umbilical cord / umbilical vein ;
R umbilical artery
[max 4]
[Total 9]

M/J15/21/Q4

4 (a) externally administered ;
substance ;
modifies / affects chemical reactions in
body ;

The Use and Abuse of Drugs P2 questions

[max 2]

(b)

brain ; depressant ;

liver ; ref. damage ;

A named parts of brain

A named, e.g. cirrhosis / liver

failure / fatty liver disease

[4]

(c) (i) nicotine ;

tar ;

carbon monoxide ;

[max 2]

(ii) reduced birth weight ; A premature birth / breathing problems

[1]

O/N12/22/Q5

5 (a) 10/11 minutes; [1]

(b) smoker/has recently smoked/passive smoking; [1]

(c) Any 2 from:

carbon monoxide/CO;

affect on O₂ carriage/fatty deposits in walls of bvs;

carbon dioxide/CO₂;

prevents loss of CO₂ from blood;

tar;

carcinogenic properties/lung cancer/inhibits gaseous diffusion/damages alveolar walls [4]

or cilia;

(d) (i) increase;

followed by decrease;

reading from graph with units; [Max 2]

(ii) arterial constriction, fat deposits or diameter reduction/heart rate increases/heart pumps harder or faster AW; [1]

(iii) prolonged raised pressure/cumulative effect;

damage to capillaries/ref. thin walls of capillaries;

any relevant effect e.g. damage to kidneys/brain/heart/blood vessels; [Max 2]

[Total: 11]

M/J11/22/Q8

8 (a) externally administered or taken;

chemical / substance;

modifies or affects / alters;

metabolism / chemical reactions in the body; [max. 3]

(b) Apply a maximum of 3 marks if drug is un-named

*named drug;

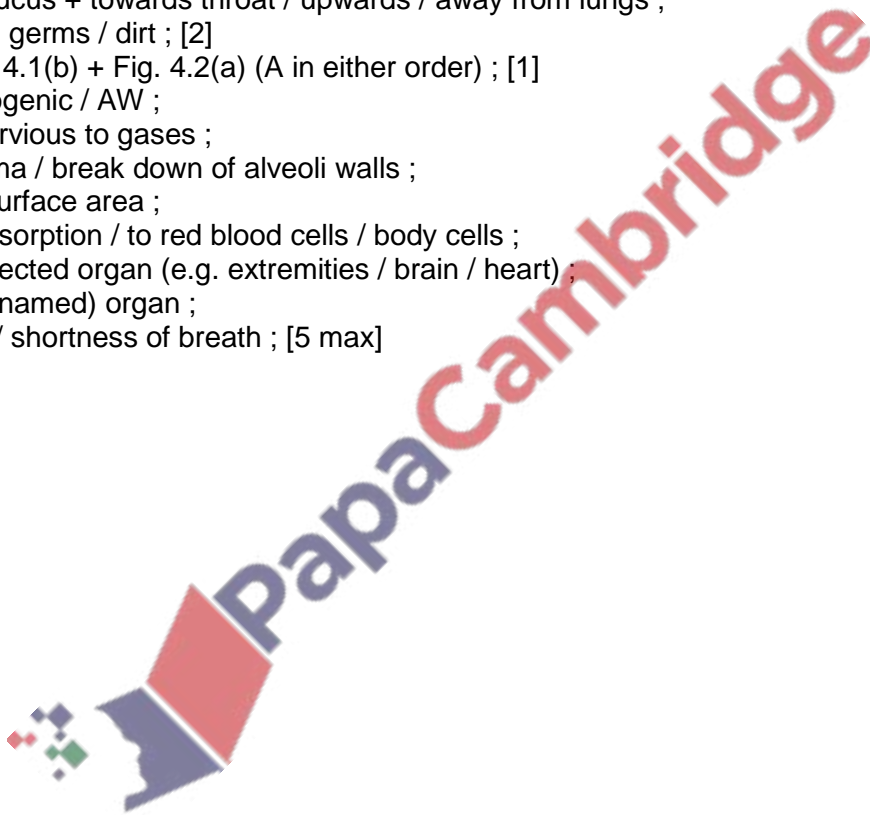
*positive effect on person (i.e. reason for taking it);

The Use and Abuse of Drugs P2 questions

tolerance / increased dosage for same effect;
dependence / addiction;
withdrawal symptoms;
crime (e.g. drink driving);
funding the habit / financial implications;
effects on addict's family / *society;
*adverse effects on health of addict from drug or means of taking it; [max. 7]
(R death)
(* These marks are available for answers relating to the misuse of antibiotics.)
[Total: 10]

M/J10/21/Q4

4 (a) (i) D cilia ;
E goblet (cell) / mucus (-producing cell) / gland (cell) ; [2]
(ii) ref. beating / AW ;
moving mucus + towards throat / upwards / away from lungs ;
containing germs / dirt ; [2]
(b) (i) Fig. 4.1(b) + Fig. 4.2(a) (A in either order) ; [1]
(ii) carcinogenic / AW ;
tar + impervious to gases ;
emphysema / break down of alveoli walls ;
reduced surface area ;
less O₂ absorption / to red blood cells / body cells ;
named affected organ (e.g. extremities / brain / heart) ;
effect on (named) organ ;
tiredness / shortness of breath ; [5 max]



M/J07/P2/Q8

The Use and Abuse of Drugs P2 questions

- 8E (a)** externally administered substance AW / chemical which modifies / changes / affects metabolism / chemical reactions in the body AW (could be of bacteria)
- (b)** (alcohol) reduces self-control / removes inhibitions
depressant / ref. nervous system
slower reaction times or any named effect
liver damage / cirrhosis / other named condition
*expense
*social implications / crime
(heroin) depressant / ref. nervous system
*addiction / greater quantities for same effect / habituation / tolerance
withdrawal symptoms AW
needle-sharing
AIDS / hepatitis
(Points marked * score *either* for alcohol or for heroin)

- 8O (a)** nicotine
*craving / addiction / agglutination or clotting of RBCs / increased blood pressure / increased heart rate / vasoconstriction / increased blood fat / atheroma AW / arteriosclerosis / effect on fetus
(*All must be with ref. nicotine)

tar
decreased O₂ uptake (must be with ref. tar)
lung or any named correct form of cancer caused by tar

CO
decreased O₂ carriage (must be related to CO)

points not tied to any particular constituent:
emphysema / bronchitis / cough / destruction of cilia
heart disease / heart attack / stroke / atheroma (if not given above)
less O₂ to fetus
miscarriage / small / underweight babies (R underdeveloped)

