

SURPRISE TEST

Subject : Physics (0625)

Name : _____

Topic : Electricity

Std : IGCSE

Total Marks : 20

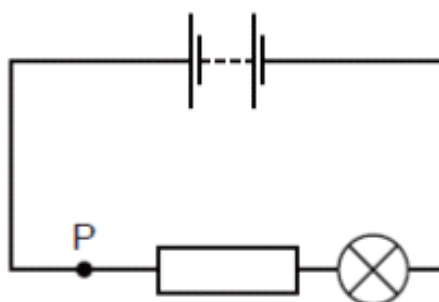
Date : _____

Marks Obtained : _____

Duration : 35 Minutes

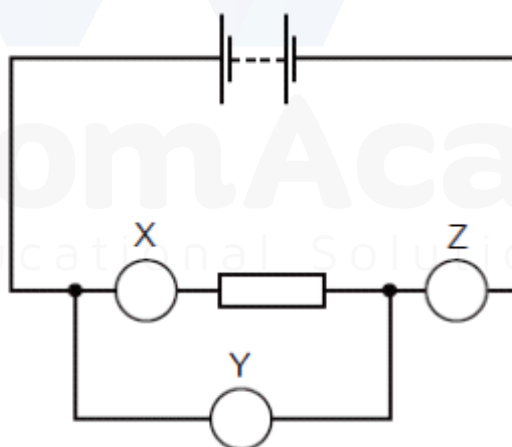
Q I. Multiple choice questions

1. The diagram shows a lamp in a circuit.



Which change to the circuit would increase the current in the lamp?

- A adding another resistor in parallel with the one in the circuit
 - B adding another resistor in series with the one in the circuit
 - C decreasing the electromotive force (e.m.f.) of the battery in the circuit
 - D moving the lamp to point P in the circuit
2. The diagram shows an electric circuit containing three meters, X, Y and Z, all connected correctly.



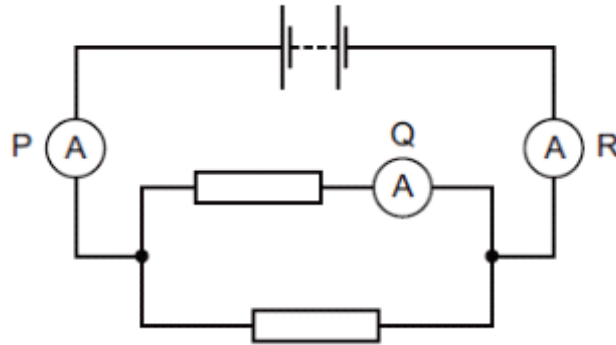
What are meters X, Y and Z?

	X	Y	Z
A	ammeter	ammeter	ammeter
B	ammeter	voltmeter	ammeter
C	voltmeter	ammeter	voltmeter
D	voltmeter	voltmeter	voltmeter

3. Some resistors are made using one type of wire. Two different lengths of wire are available. Each length is available in two different diameters.
Which wire has the highest resistance?

- A the wire with the greater length and the larger diameter
- B the wire with the greater length and the smaller diameter
- C the wire with the smaller length and the larger diameter
- D the wire with the smaller length and the smaller diameter

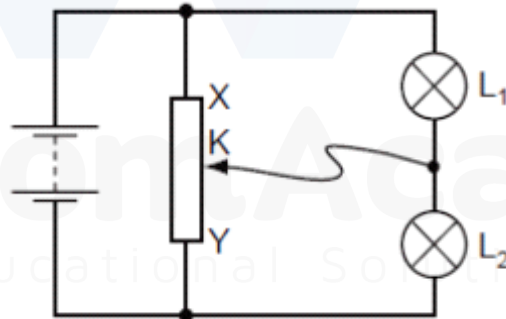
4. The diagram shows a circuit containing three ammeters P, Q and R.



Which statement about the readings on the ammeters is correct?

- A The reading on P is equal to the reading on Q.
- B The reading on P is equal to the reading on R.
- C The reading on Q is greater than the reading on P.
- D The reading on Q is greater than the reading on R.

5. The diagram shows a potential divider circuit with two identical lamps L₁ and L₂.



The contact K is halfway between X and Y and the lamps are equally bright.

What will happen to the brightness of the lamps when contact K is moved a short distance towards X?

	lamp L ₁	lamp L ₂
A	brighter	brighter
B	brighter	dimmer
C	dimmer	brighter
D	dimmer	dimmer

Q II Answer the following questions.

- 1 A student sets up a circuit containing three identical cells. Each cell has an e.m.f. (electromotive force) of 2.0 V.

Fig. 1.1 shows the cells in series with a length of uniform metal wire connected between two terminals K and L, an ammeter and a resistor X.

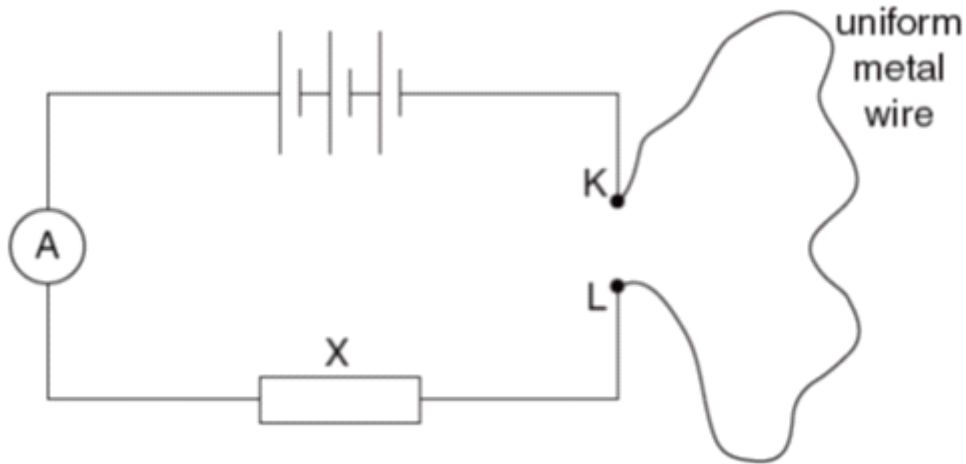


Fig. 1.1

- (a) State the total e.m.f. of the three cells in series.

total e.m.f. = _____ [1]

- (b) The ammeter reading is 0.25 A.

- (i) Calculate the charge that flows through the circuit in twelve minutes.

charge = _____ [2]

- (ii) The metal wire has a resistance of 16 Ω .
Calculate the resistance of resistor X.

resistance = _____ [2]

- (c) The student removes the $16\ \Omega$ wire from the circuit and cuts it into two equal lengths. He then connects the two lengths in parallel between K and L, as shown in Fig. 1.2.

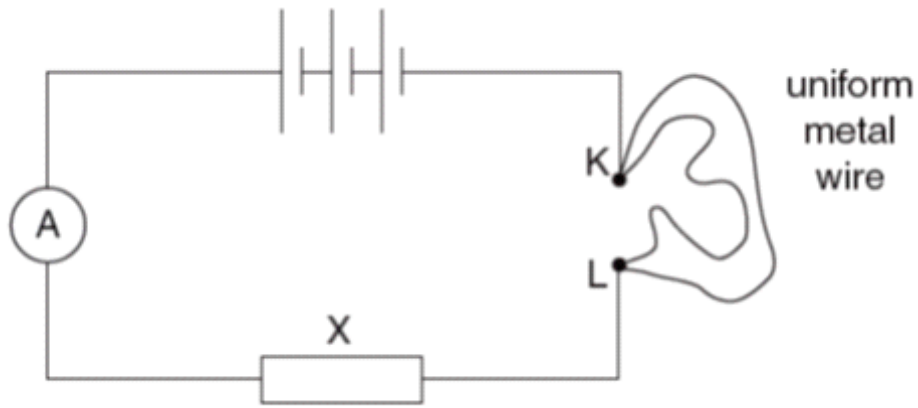


Fig. 1.2

Calculate the resistance of the two lengths of wire in parallel.

resistance = _____

[2]

[Total: 7]

- 2 (a) Fig. 2.1 shows a positively charged plastic rod, a metal plate resting on an insulator, and a lead connected to earth.



Fig. 2.1

Describe how the metal plate may be charged by induction.

[2]

(b) Fig. 2.2 shows two parallel conducting plates connected to a battery.

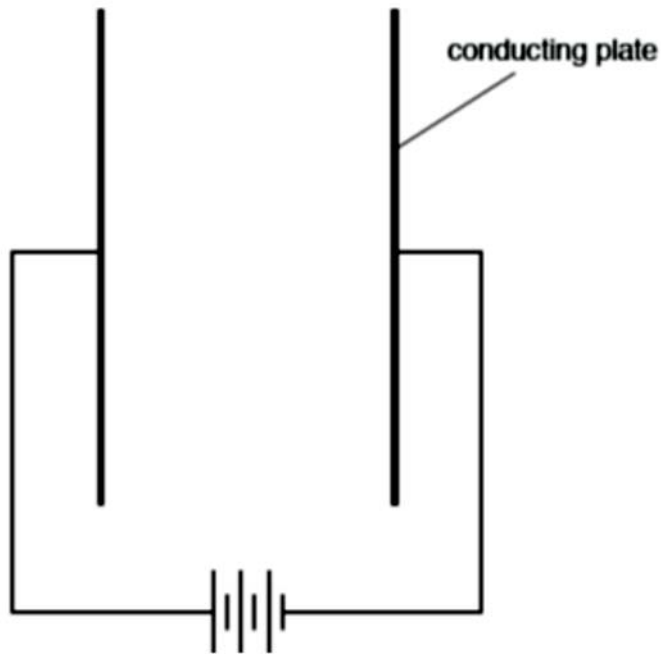


Fig. 2.2

Copy the diagram on your answer sheet and draw five lines to show the electric field pattern between the two plates.

[2]

[Total: 4]

3 Fig. 3.1 is a circuit diagram.

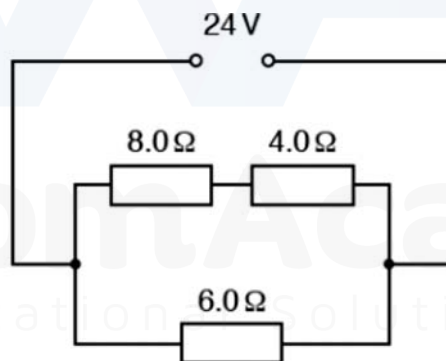


Fig. 3.1

Calculate

(a) the resistance of the circuit,

resistance = _____

[2]

(b) the potential difference (p.d.) across the 8.0 Ω resistor.

p.d. = _____

[2]

[Total: 4]

WORKSHEET

Subject : Chemistry (0620)

Name : _____

Topic : Organic Chemistry and Polymers

Std : IGCSE

Date : _____

Q.1) Tick the correct the answer

1. The statements below are about the alcohol homologous series.

The alcohols have the same _____ 1 _____ formula.

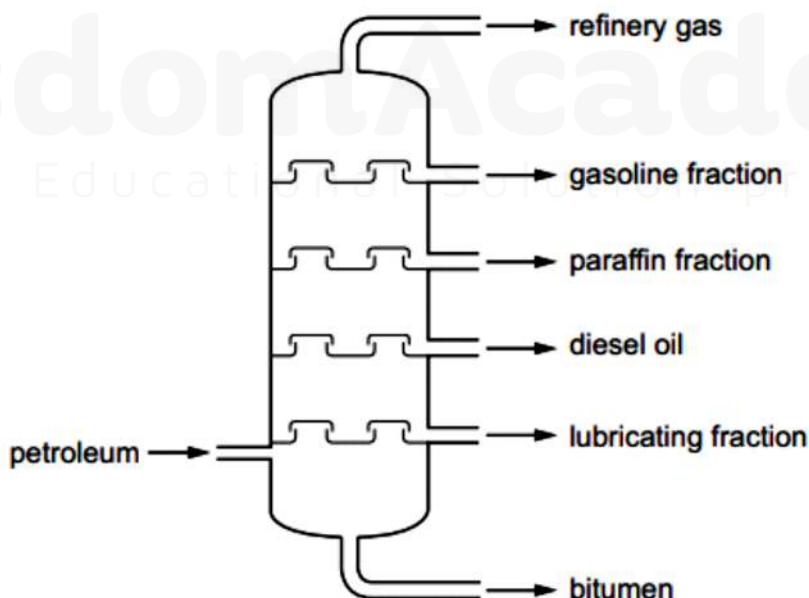
The alcohols have _____ 2 _____ chemical properties because they have the same _____ 3 _____.

The melting points of the alcohols _____ 4 _____ as the number of carbon atoms increases.

Which words correctly complete gaps 1-4?

	1	2	3	4
A	general	different	functional group	decrease
B	general	similar	electronic structure	increase
C	general	similar	functional group	increase
D	molecular	similar	functional group	increase

2. The fractional distillation of petroleum is shown.



Which fraction is the least volatile?

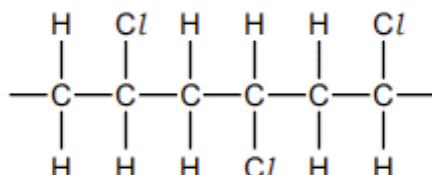
- A** bitumen **B** diesel oil **C** gasoline fraction **D** refinery gas

3. The formula of an ester is $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOCH}_2\text{CH}_2\text{CH}_3$.

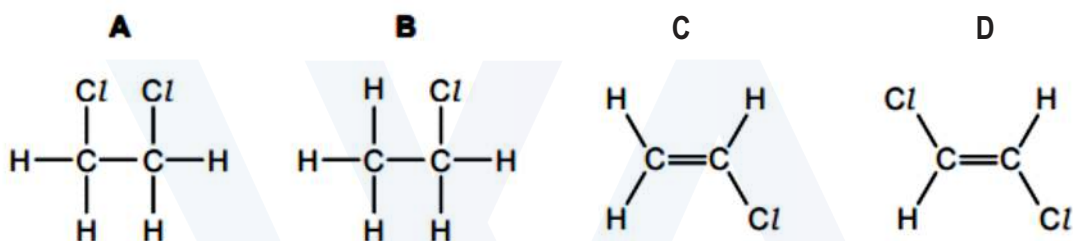
Which acid and alcohol react together to make the ester?

	acid	alcohol
A	butanoic acid	butanol
B	butanoic acid	propanol
C	propanoic acid	butanol
D	propanoic acid	propanol

4. The diagram shows three repeat units in the structure of an addition polymer.



Which alkene monomer is used to make this polymer?



5. Ethene forms an addition polymer as shown.



Which terms describe this polymer?

- A** a saturated compound called poly(ethane)
B a saturated compound called poly(ethene)
C an unsaturated compound called poly(ethane)
D an unsaturated compound called poly(ethene)

[Total : 5]

Q II) Answer the following :

1. Butane is oxidised to a mixture of carboxylic acids by oxygen in the presence of a catalyst. The acids formed are methanoic acid, ethanoic acid and propanoic acid – the first three members of the carboxylic acid homologous series.

- (a) (i) Give the name and structural formula of the fourth member of this series.

name _____

structural formula showing all the atoms and bonds

- (ii) State two characteristics of a homologous series. [2]

- (b) Carboxylic acids react with alcohols to form esters. Ethanol reacts with ethanoic acid to form the ester ethyl ethanoate, $\text{CH}_3\text{COOCH}_2\text{CH}_3$.

- (i) Give the name and formula of the ester which is formed from methanol and propanoic acid.

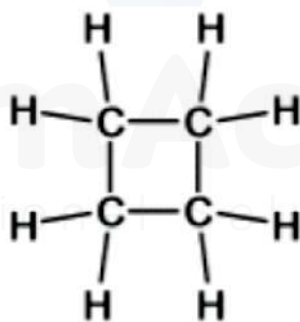
name _____

formula _____ [2]

- (ii) What is the name of the ester which has the formula $\text{CH}_3\text{COOCH}_3$?

_____ [1]

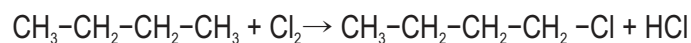
2. A hydrocarbon has the following structural formula.



- (a) Draw the structural formula of an isomer of the above hydrocarbon.

- (b) Explain why these two hydrocarbons are isomers. [1]

3. The equation for a substitution reaction of butane is given below.



(a) Name the organic product.

_____ [1]

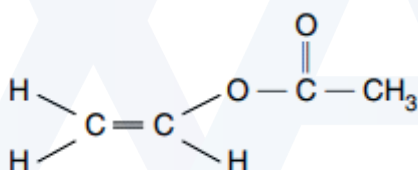
(b) This reaction does not need increased temperature or pressure. What is the essential reaction condition?

_____ [1]

(c) Write a different equation for a substitution reaction between butane and chlorine.

[1]

4. (a) Draw the structure of the polymer formed from the following monomer

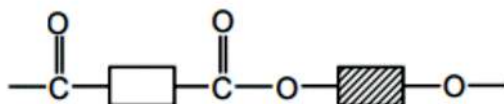


[1]

(b) Draw the structural formula of a man-made polymer with the amide linkage.

[1]

(c) A polyester is represented by the structure shown.



Complete the diagrams below to show the structures of the monomers used to produce the polyester. Show all atoms and bonds.

[1]

[Total :15]

TEST-SHEET

Subject : Mathematics (0580)

Name : _____

Topic : Trigonometry

Std : IGCSE

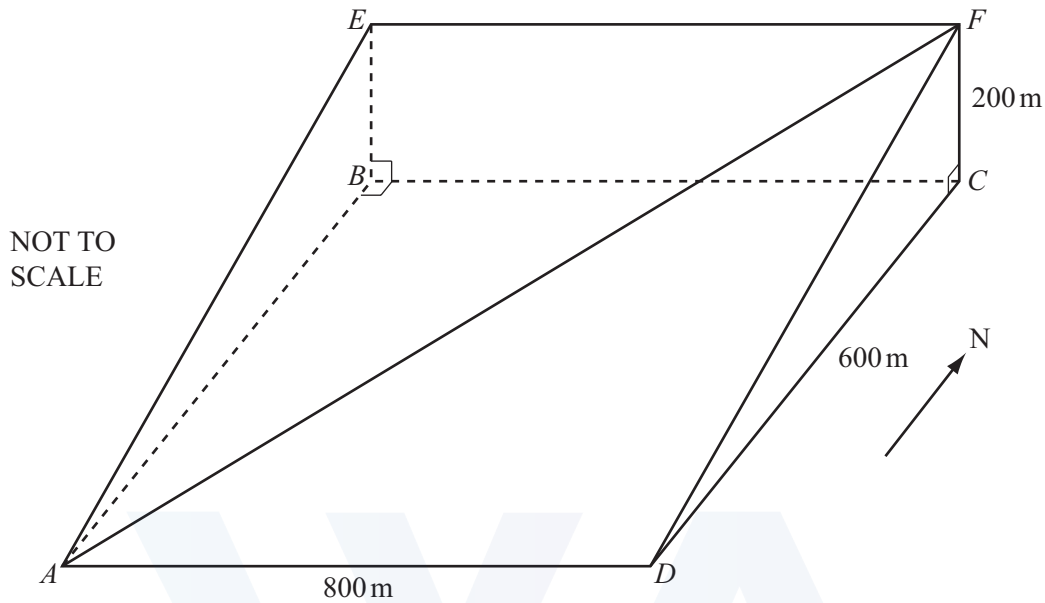
Total Marks : 20

Date : _____

Marks Obtained : _____

Duration : 40 Minutes

1



$ABCD$, $BEFC$ and $AEFD$ are all rectangles.
 $ABCD$ is horizontal, $BEFC$ is vertical and $AEFD$ represents a hillside.
 AF is a path on the hillside.
 $AD = 800\text{ m}$, $DC = 600\text{ m}$ and $CF = 200\text{ m}$.

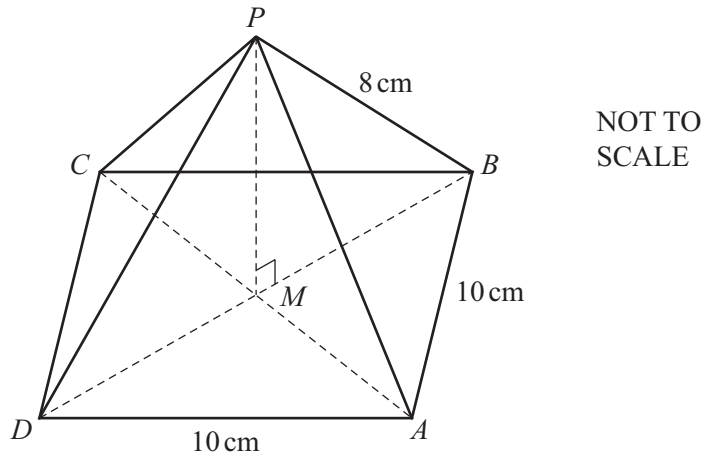
(a) Calculate the angle that the path AF makes with $ABCD$.

Answer(a) [4]

(b) In the diagram D is due south of C .
 Jasmine walks down the path from F to A in bad weather. She cannot see the path ahead.
 The compass bearing she must use is the bearing of A from C .
 Calculate this bearing.

Answer(b) [3]

2



The diagram represents a pyramid with a square base of side 10 cm .

The diagonals AC and BD meet at M . P is vertically above M and $PB = 8\text{ cm}$.

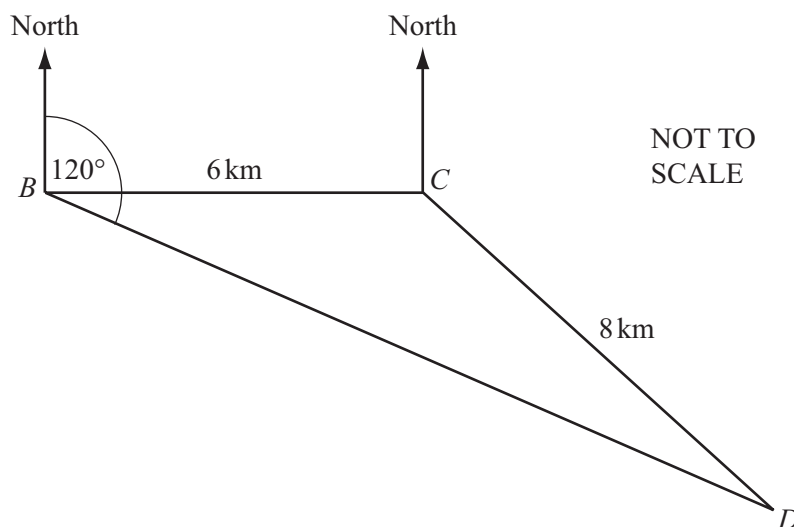
(a) Calculate the length of BD .

Answer(a) $BD = \dots\dots\dots\text{ cm}$ [2]

(b) Calculate MP , the height of the pyramid.

Answer(b) $MP = \dots\dots\dots\text{ cm}$ [3]

- 3 A helicopter flies from its base B to deliver supplies to two oil rigs at C and D .
 C is 6 km due east of B and the distance from C to D is 8 km.
 D is on a bearing of 120° from B .



Find the bearing of D from C .

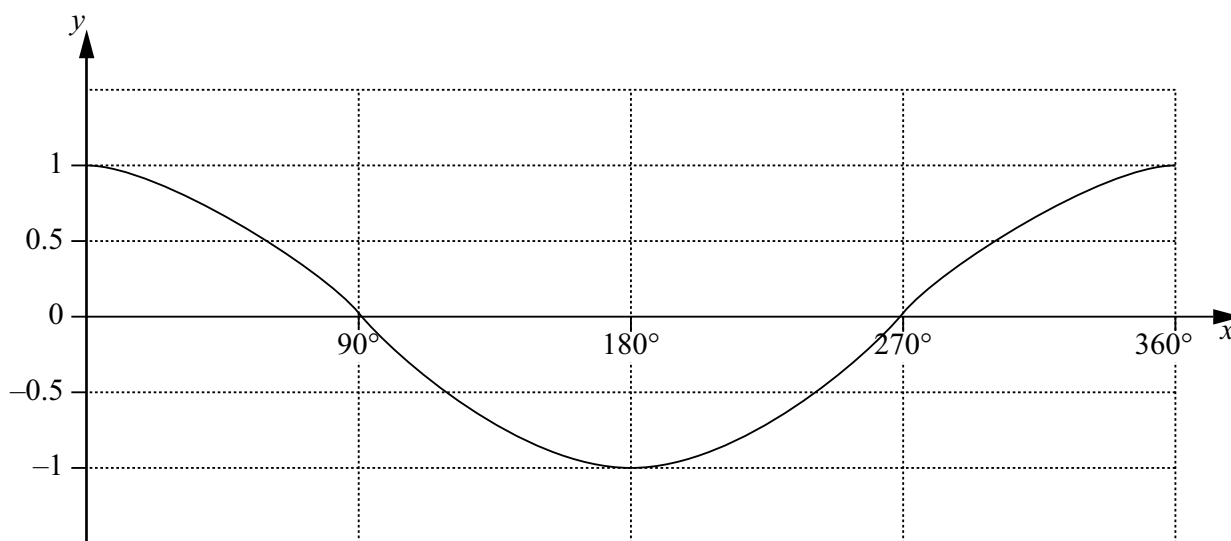
WXA

WisdomAcademy

Premier Educational Solution provider

Answer [4]

4 The grid shows the graph of $y = \cos x$ for $0^\circ \leq x \leq 360^\circ$.



(a) Solve the equation $3\cos x = 1$ for $0^\circ \leq x \leq 360^\circ$.
Give your answers correct to 1 decimal place.

..... and [2]

(b) On the same grid, sketch the graph of $y = \sin x$ for $0^\circ \leq x \leq 360^\circ$.

[2]

WORKSHEET

Subject : Biology (0610)

Name : _____

Topic : Excretion | Drugs

Std : IGCSE

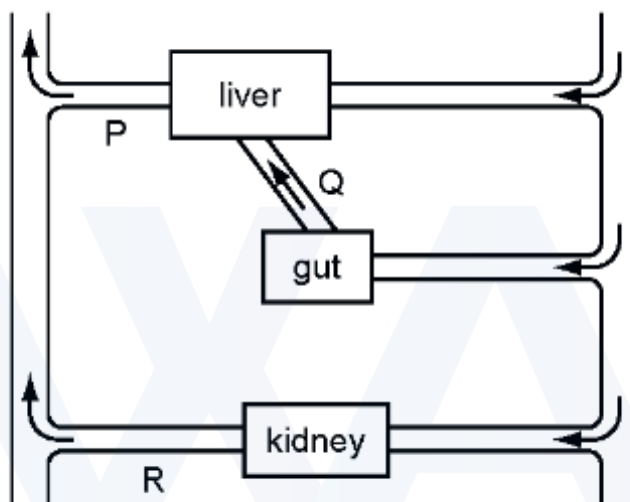
Date : _____

1. Which substance is lost from the body by the kidneys, lungs and the skin?

- A) Carbon dioxide B) Excess ions C) Urea D) Water

[1]

2. The diagram represents some human organs and their blood vessels.



Immediately after taking an alcoholic drink, how would the level of alcohol compare in blood vessels P, Q and R?

	P	Q	R
A	high	medium	high
B	medium	high	low
C	low	low	medium
D	high	low	low

[1]

3. State a long term effect alcohol can have on two named organs.

Organ 1 _____

Effect _____

Organ 1 _____

Effect _____

[2]

4. Fig. 4.1 shows a kidney tubule and its associated blood vessels.

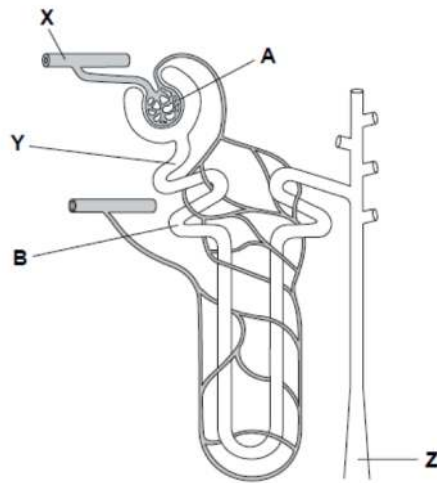


Fig. 4.1

a. Describe the functions of the regions labelled A and B.

A _____

B _____

_____ [4]

Table 4.1 shows the concentrations of some substances in the blood at X, the fluid at Y and the urine at Z.

Table 4.1

substance	concentration / g per 100cm ³		
	blood at X	fluid at Y	urine at Z
glucose	0.1	0.1	0.0
protein	7	0	0
sodium ions	0.35	0.35	0.5
urea	0.03	0.03	2.0

b. Name the substance shown in Table 4.1 that has molecules that are too large to pass through the walls of capillaries

_____ [1]

- c. People who have acute kidney failure are given dialysis treatment.

In dialysis machines, the blood flows through narrow tubes made from partially permeable membranes, surrounded by dialysis fluid.

- (i) Dialysis fluid contains sodium ions.

Use the information in Table 4.1 to suggest the concentration of sodium ions that should be in the fluid and give a reason for your answer.

Concentration _____ g per 100 cm³

Reason _____

_____ [2]

- (ii) State two components of blood that are not in dialysis fluid.

1 _____

2 _____ [2]

5. Tobacco smoke contains harmful chemicals.

State one effect of the following chemicals in tobacco smoke:

- a. Carbon monoxide;

- b. Nicotine;

- c. Tar.

_____ [3]

6. Antibiotics are used to treat human diseases. Many bacteria have become resistant to antibiotics. Some antibiotics can no longer be used to treat certain diseases. Samples of bacteria were taken from a person who had infectious diseases. They were spread onto four Petri dishes of agar (agar plates). Three of these agar plates contained the antibiotics 1, 2 or 3. The results are shown in Fig. 6.1.

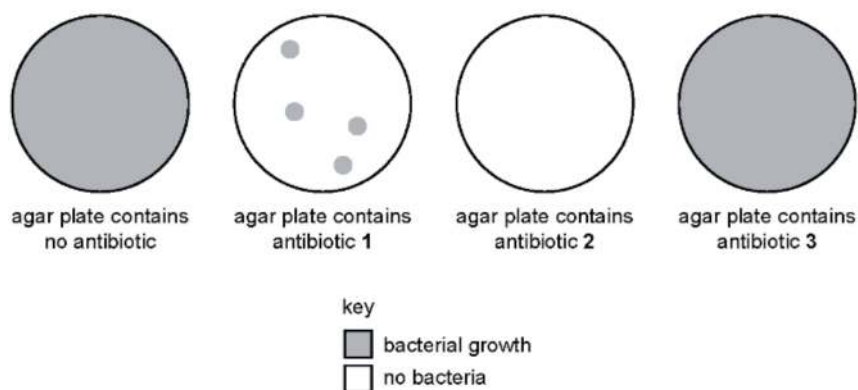


Fig. 6.1

Explain why:

- i. No bacteria grew in the agar plate with antibiotic 2;

_____ [1]

- ii. Bacteria grew in the agar plate with antibiotic 3;

_____ [1]

- iii. Only a small number of bacteria grew with antibiotic 1.

_____ [2]