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NAME: _____ ()

CLASS: 1E _____



HOUGANG SECONDARY SCHOOL

SEMESTRAL ASSESSMENT 1 / 2018

GENERAL SCIENCE

Paper 1 Multiple Choice

SECONDARY ONE EXPRESS

Tuesday, 8 May 2018

**Total Duration for Paper 1 and 2:
1 hour 30 minutes**

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READ THESE INSTRUCTIONS FIRST

Write your name, register number and class in the spaces at the top of this page and OTAS.

There are **twenty** questions on this paper. Answer **all** questions. For each question there are four possible answers **A, B, C** and **D**.

Choose the **one** you consider correct and record your choice in **soft pencil** on the separate OTAS.

A copy of the Periodic Table is printed on page **7** in this paper.

The use of an approved scientific calculator is expected, where appropriate.

Hand in Paper 1, OTAS and Paper 2 **separately**.

1 Which of the following examples is not an application of Science?

- A explain the preference for chicken sandwich over tuna sandwich
- B extraction of vanilla essence from vanilla beans using different edible solvents
- C study the effect of different amount of fertiliser applied on the mass of fruit produced by fruit trees
- D study the effect of river water temperature on the number of plants and animals

2 A plant placed near a window slants towards the window.

A scientist made a hypothesis that plants are able to move and they respond to light. He then planned an experiment which proved that his hypothesis was correct.

Which attitude of the scientist is not displayed?

- A compassion
- B curiosity
- C objectivity
- D open-mindedness

3 Blood samples found in the hospital are labelled with hazard symbols.

Which of the following hazard symbols are found on the blood samples?

A



B



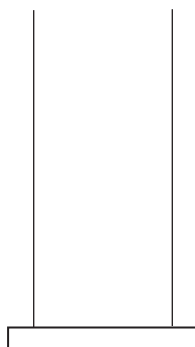
C



D



- 4 Which of the following describes the function of the apparatus shown below?



- A** for collecting gas during experiments
B for evaporating the liquid in a solution over a Bunsen burner
C for mixing chemicals to produce a gas when heating is not required
D for mixing chemicals to produce a gas when heating is required
- 5 Which of the following describes the function of the gas jet in a Bunsen burner?
- A** to control rate of gas flow into the gas jet
B to enable gas to rush out from the gas supply
C to raise the flame to a suitable height for burning
D to support the burner so that it will not topple over
- 6 Which of the following is an example of a safe laboratory practice?
- A** not tying the hair when carrying out experiments
B pieces of paper are placed near to the Bunsen flame
C pointing the mouth of a heated test-tube towards your face
D wearing a pair of safety goggles when carrying out heating experiments
- 7 Which of the following physical quantities is correctly matched to its S.I. units?

	physical quantity	S.I. unit
A	length	centimeter
B	mass	gram
C	temperature	degree Celsius
D	time	second

8 Which statement about density is incorrect?

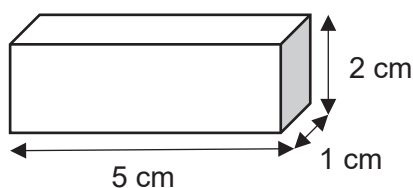
- A Density is defined as the volume per unit mass.
- B Density of a denser material has a higher value than a less dense object.
- C Density of a material decreases when heated.
- D Density of the same material is constant.

9 A piece of copper and a piece of aluminium have the same volume.

Given the density of copper is 8.9 g/cm^3 and the density of aluminium is 2.7 g/cm^3 , which of the following statements is true?

- A Both objects have the same mass.
- B The mass of the aluminium and copper objects cannot be compared from the given information.
- C The mass of the aluminium object is higher than that of the copper object.
- D The mass of the copper object is higher than that of the aluminium object.

10 A cuboid of 5 cm by 2 cm by 1 cm has a mass of 17.6 g.



Which of the following is the density of the object?

- A 0.568 g/cm^3
- B 0.568 kg/m^3
- C 1.76 g/cm^3
- D 1.76 kg/m^3

11 Which of the following does not belong to the category of fibres?

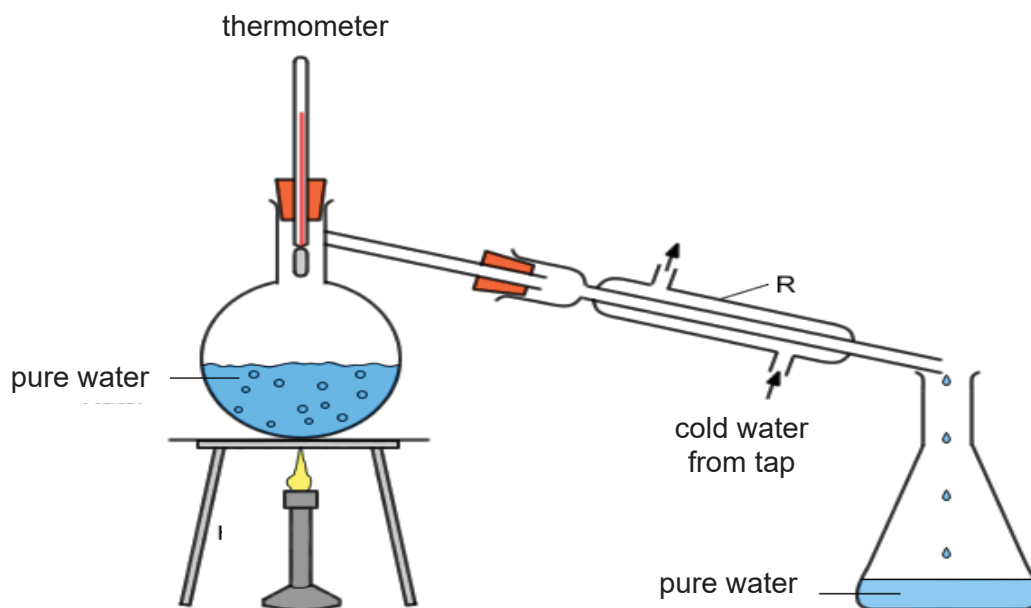
- A aluminium foil
- B cotton
- C nylon
- D rayon

12 Which element is a colourless gas that supports life processes in living organisms?

- A chlorine
- B nitrogen
- C oxygen
- D sulfur

- 13 Which of the following elements has similar chemical properties as fluorine?
- A bromine
 - B carbon
 - C helium
 - D oxygen
- 14 The chemical compound, chalk, is made up of
- A calcium, carbon and oxygen.
 - B calcium, hydrogen and oxygen.
 - C carbon, chlorine and hydrogen.
 - D carbon, chlorine and oxygen.
- 15 Which of the following is an example of a mixture?
- A blood
 - B calcium carbonate
 - C magnesium
 - D sodium hydroxide
- 16 Which of the following statements does not show that sugar solution is a mixture?
- A Sugar and water can be mixed in any proportion.
 - B Sugar and water can be separated by physical separation methods.
 - C Sugar solution has properties similar to that of sugar and water.
 - D Sugar solution is a clear solution that allows light to pass through.
- 17 Which mixture can be separated by magnetic attraction?
- A chalk and sand
 - B nickel and salt
 - C pen ink mixture
 - D sugar solution
- 18 Which of the following is a practical application of evaporation to dryness?
- A extraction of colouring from flower petals
 - B extraction of iron from other scrap metals
 - C extraction of salt from seawater
 - D extraction of sugar from sugar cane sap

- 19 The figure shows a distillation set-up.



Which of the following statements explains the direction of cold water flow into the condenser?

- A to decrease the surface area for faster condensation of water vapour
 - B to increase the boiling point of water
 - C to increase the surface area for faster condensation of water vapour
 - D to lower the boiling point of water
- 20 Why is reverse osmosis a preferred method of desalination as compared to simple distillation?
- A Reverse osmosis has the ability to extract water that is less pure.
 - B Reverse osmosis has the ability to extract water that is purer.
 - C Reverse osmosis requires a higher amount of heat to extract water.
 - D Reverse osmosis requires a lower amount of heat to extract water.

End of Paper 1

The Periodic Table of Elements

Group																											
I	II											III	IV	V	VI	VII	0										
Key proton (atomic) number atomic symbol name relative atomic mass																	1 H hydrogen 1										
3 Li lithium 7	4 Be beryllium 9											5 B boron 11	6 C carbon 12	7 N nitrogen 14	8 O oxygen 16	9 F fluorine 19	10 Ne neon 20										
11 Na sodium 23	12 Mg magnesium											13 Al aluminium 27	14 Si silicon 28	15 P phosphorus 31	16 S sulfur 32	17 Cl chlorine 35.5	18 Ar argon 40										
19 K potassium 39	20 Ca calcium 40	21 Sc scandium 45	22 Ti titanium 48	23 V vanadium 51	24 Cr chromium 52	25 Mn manganese 55	26 Fe iron 56	27 Co cobalt 59	28 Ni nickel 59	29 Cu copper 64	30 Zn zinc 65	31 Ga gallium 70	32 Ge germanium 73	33 As arsenic 75	34 Se selenium 79	35 Br bromine 80	36 Kr krypton 84										
37 Rb rubidium 85	38 Sr strontium 88	39 Y yttrium 89	40 Zr zirconium 91	41 Nb niobium 93	42 Mo molybdenum 96	43 Tc technetium	44 Ru ruthenium 101	45 Rh rhodium 103	46 Pd palladium 106	47 Ag silver 108	48 Cd cadmium 112	49 In indium 115	50 Sn tin 119	51 Sb antimony 122	52 Te tellurium 128	53 I iodine 127	54 Xe xenon 131										
55 Cs caesium 133	56 Ba barium 137	57 – 71 lanthanoids	72 Hf hafnium 178	73 Ta tantalum 181	74 W tungsten 184	75 Re rhenium 186	76 Os osmium 190	77 Ir iridium 192	78 Pt platinum 195	79 Au gold 197	80 Hg mercury 201	81 Tl thallium 204	82 Pb lead 207	83 Bi bismuth 209	84 Po polonium	85 At astatine	86 Rn radon										
87 Fr francium	88 Ra radium	89 – 103 actinoids	104 Rf rutherfordium	105 Db dubnium	106 Sg seaborgium	107 Bh bohrium	108 Hs hassium	109 Mt meitnerium	110 Ds darmstadtium	111 Rg roentgenium	112 Cn copernicium	114 Fl flerovium	116 Lv livermorium	–	–	–	–										
lanthanoids																											
57 La lanthanum 139	58 Ce cerium 140	59 Pr praseodymium 141	60 Nd neodymium 144	61 Pm promethium	62 Sm samarium 150	63 Eu europium 152	64 Gd gadolinium 157	65 Tb terbium 159	66 Dy dysprosium 163	67 Ho holmium 165	68 Er erbium 167	69 Tm thulium 169	70 Yb ytterbium 173	71 Lu lutetium 175													
actinoids																											
89 Ac actinium	90 Th thorium 232	91 Pa protactinium 231	92 U uranium 238	93 Np neptunium	94 Pu plutonium	95 Am americium	96 Cm curium	97 Bk berkelium	98 Cf californium	99 Es einsteinium	100 Fm fermium	101 Md mendelevium	102 No nobelium	103 Lr lawrencium													

The volume of one mole of any gas is 24 dm³ at room temperature and pressure (r.t.p.).

NAME: _____ ()

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GENERAL SCIENCE
PAPER 2
SECONDARY ONE EXPRESS

Tuesday, 8 May 2018

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1 hour 30 minutes

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READ THESE INSTRUCTIONS FIRST

Write your name, register number and class in the spaces at the top of this page.

You may use an HB pencil for any diagrams, graphs, tables or rough working.

Write in dark blue or black pen.

Do not use staples, paper clips, glue or correction fluid.

The use of an approved scientific calculator is expected, where appropriate.

You may lose marks if you do not show your working or if you do not use appropriate units.

Section AAnswer **all** questions.

Write your answers in the spaces provided on this paper.

Section BAnswer **both** questions.

Write your answers in the spaces provided on this paper.

FOR EXAMINER'S USE	
Paper 1	/ 20
Paper 2: Section A	/ 30
Paper 2: Section B	/ 20
Total	/ 70

The number of marks is given in brackets [] at the end of each question or part question.

A copy of the Periodic Table is printed on page 7 of Paper 1.

Hand in Paper 1, OTAS and Paper 2 **separately**.

Section A (30 marks)

Answer **all** the questions in the space provided.

- 1** An experiment was carried out to investigate the effect of the type of solvent on the rate of dissolving of sugar. Three types of solvent were used – alcohol, water and oil.

For each of the variables listed below, state whether it is a **dependent**, **independent** or **controlled** variable.

One example has been done for you.

eg. type of solvent

independent variable

- (a) mass of sugar added to each solvent variable
- (b) temperature of solvent variable
- (c) time taken for sugar to dissolve variable [2]

- 2** Fig. 2.1 shows an experiment set-up used to separate a suspension.

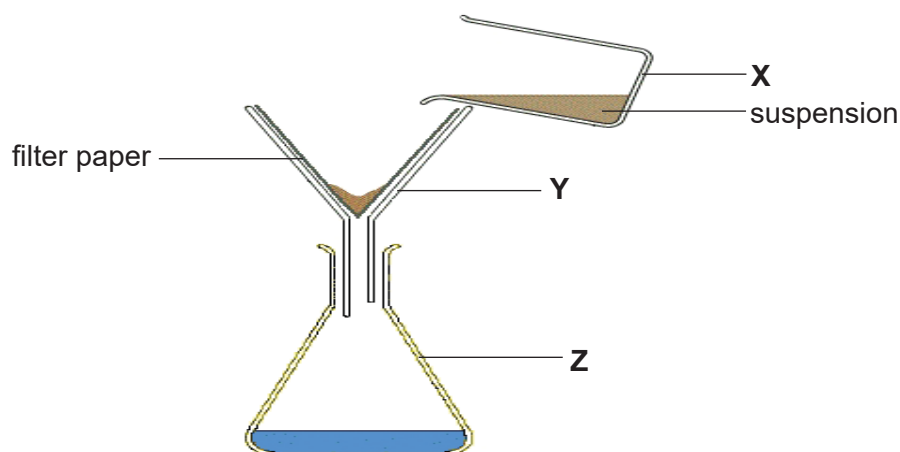


Fig. 2.1

- (a) Name the separation technique used in the experiment.

..... [1]

- (b) Identify the science laboratory apparatus labelled **X**, **Y** and **Z**.

X

Y

Z [3]

- (c) If the suspension used is a flour and water mixture, identify the

(i) residue,

(ii) filtrate. [2]

- 3 Vernier caliper is an instrument used to measure the internal and external diameters of objects. Zero error may occur when the main scale and vernier scale of the vernier caliper are not aligned in a straight line.

Fig. 3.1 shows the zero error of a vernier caliper.

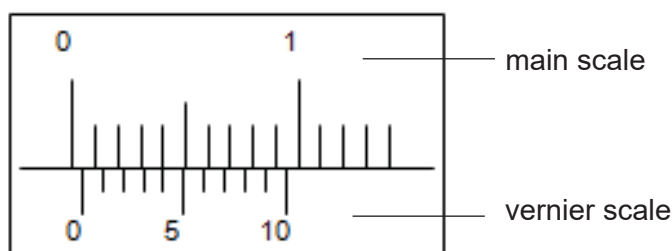


Fig. 3.1

- (a) State the zero error shown in Fig. 3.1.

..... [1]

The same vernier caliper is used to measure the diameter of the sphere.

Fig. 3.2 shows the vernier caliper measurement.

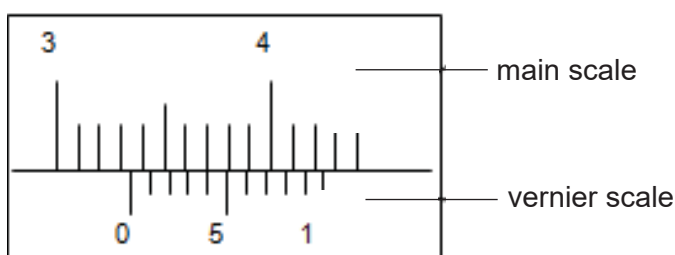


Fig. 3.2

- (b) State the observed diameter shown in Fig. 3.2.

..... [1]

- (c) Hence, calculate the actual diameter of the sphere based on your answer in parts (a) and (b).

actual diameter of the sphere = cm [2]

- 4 Fig. 4.1 shows the final positions of three different objects **X**, **Y** and **Z** when placed in a beaker containing a liquid of density 0.920 g/cm^3 .

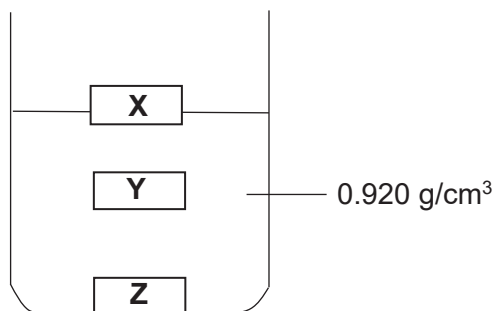


Fig. 4.1

- (a) Explain what determines if the object floats or sinks in the liquid.

.....
 [1]

- (b) The densities of two objects are given below.

0.0500 g/cm^3

0.920 g/cm^3

From your answer in part (a) and by referring to Fig. 4.1, match the densities to the correct object.

- (i) Object has the density of 0.0500 g/cm^3 .
 (ii) Object has the density of 0.920 g/cm^3 . [2]

- 5 (a) Vitamin C tablets dissolve in water to form a solution.

- (i) State one characteristic of a solution.

.....
 [1]

- (ii) Identify the *solute* and *solvent*.

solute

solvent [1]

- (iii) Suggest two ways to increase the rate of dissolving of Vitamin C tablets in a beaker of water.

.....
 [2]

Fig. 5.1

(i) an element that belongs to Period 1,

[1]

(ii) an element that belongs to Group V,

[1]

- (iii) an element that belongs to Group 0,

[1]

(iv) an element that conducts electricity,

[1]

(v) an element that is a gas.

[1]

- 6 Fig. 6.1 shows an onion epidermal cell found on the fleshy leaf of the onion bulb.

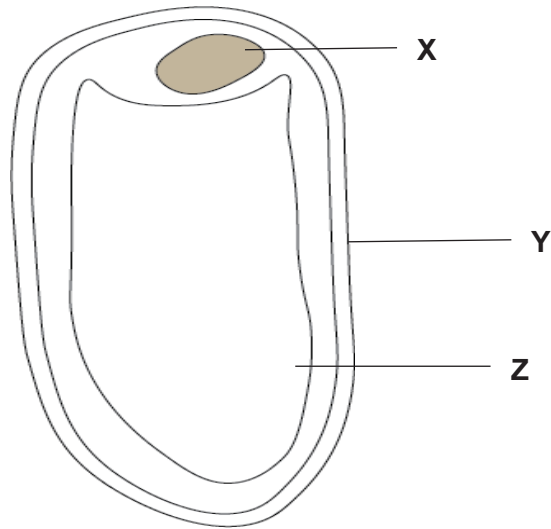


Fig. 6.1

- (a) Identify parts **X** to **Z** on the onion epidermal cell.

X

Y

Z

[3]

- (b) State the function of the part labelled **X** and **Y**.

(i) **X** [1]

(ii) **Y** [1]

- (c) Name a plant organelle that is typically found in a plant cell but absent in Fig. 6.1.

..... [1]

Section B (20 marks)Answer **all** questions in the space provided.

- 7 (a) Classify the following substances as an
- element*
- , a
- compound*
- or a
- mixture*
- .

carbon dioxide chromium seawater salt brass sugar

<i>an element</i>	<i>a compound</i>	<i>a mixture</i>

[3]

- (b) Table 7.1 shows the properties of three unknown substances,
- X**
- ,
- Y**
- and
- Z**
- .

substance	ability to break down when electricity is passed through it	ability to be separated by physical methods such as filtration
X	breaks down when electricity passes through it	cannot be separated by physical method
Y	does not break down when electricity passes through it	cannot be separated by physical method
Z	breaks down when electricity passes through it	can be separated by physical method

Table 7.1

- (i) Define the term
- compound*
- .

.....

.....

[2]

- (ii) State if
- X**
- ,
- Y**
- and
- Z**
- is an element, a compound or a mixture.

X**Y****Z**

[3]

(c) (i) How can water be extracted from orange juice?

..... [1]

(ii) State the two processes involved in part (c)(i).

1.

2.

[1]

8 Table 8.1 shows the physical properties of five different materials – ceramic, fibre, glass, metal and plastic.

material	strength	estimated density / g/cm^3	flexibility	electrical conductivity	thermal conductivity
ceramic	medium	3.16	non-flexible	poor	poor
fibre	low	1.54	flexible	poor	poor
glass	medium	2.40	non-flexible	poor	poor
metal	very high	7.80	flexible	very good	very good
plastic	high	0.920	non-flexible	poor	poor

Table 8.1

(a) (i) Based on the data on Table 8.1, suggest a suitable material to make the base of the cooking pot.

..... [1]

(ii) Give a reason to support your answer to part (a)(i).

.....

..... [2]

(iii) Use data from Table 8.1 to explain why fibre is used to make clothes instead of metal.

.....

..... [1]

- (iv) State a reason for using plastic to make the pot handle instead of using glass.
Explain your answer.

.....
.....

[2]

- (b) A cup made of ceramic is coated with a paint known as **GW**.
It is suspected that the paint **GW** contains chemicals that are harmful to the human body.
A paper chromatography test is done using **GW** and three known harmful chemicals.

Fig. 8.2 shows the paper chromatogram results.

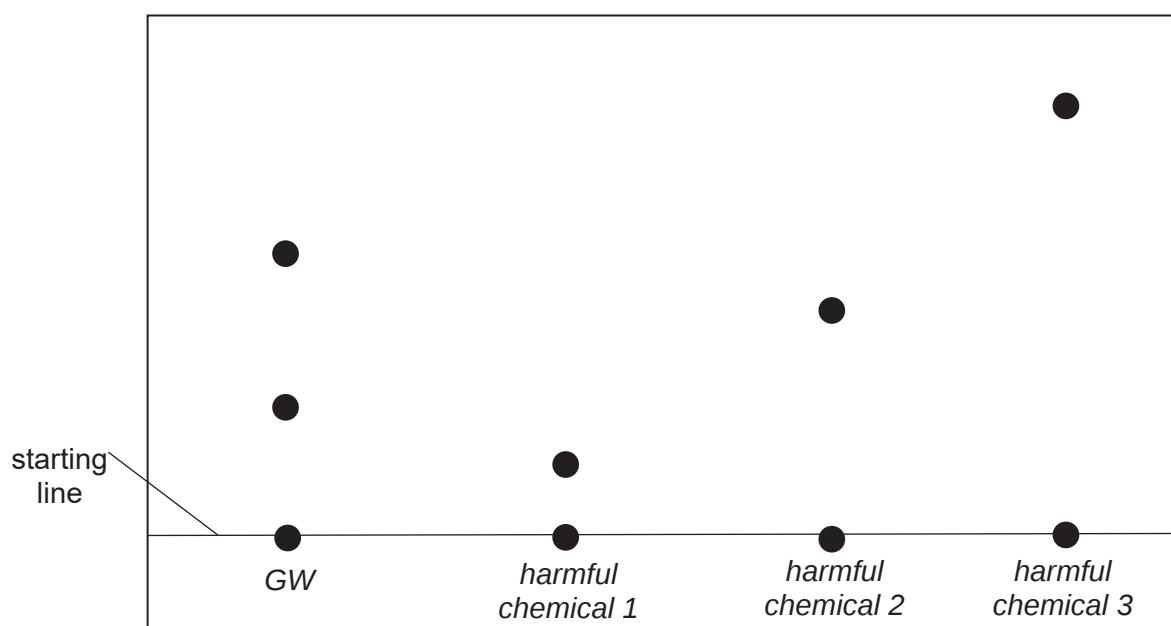


Fig. 8.2

- (i) Explain why the starting line is drawn using pencil.

.....
.....

[2]

- (ii) State the number of dyes present in **GW**.

.....

[1]

- (iii) State if **GW** is harmful to our body by using the paper chromatogram results to explain your answer.

.....
.....

[1]

End of Paper 2

