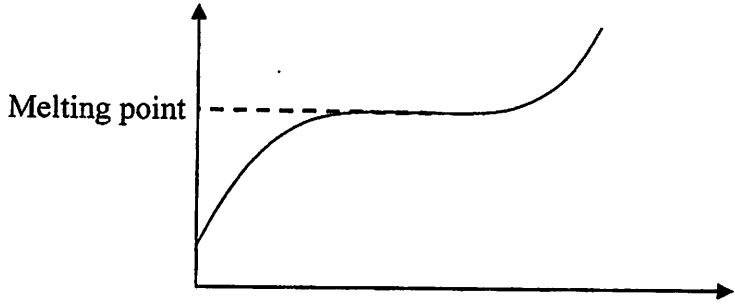
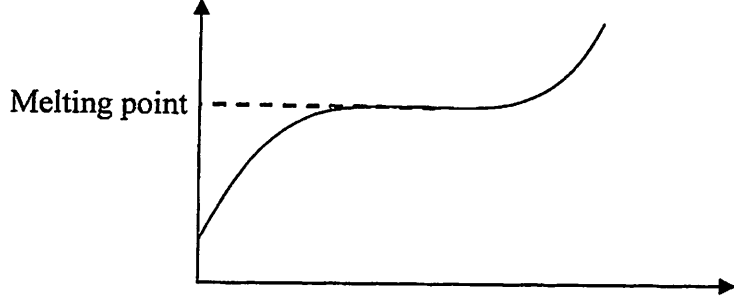
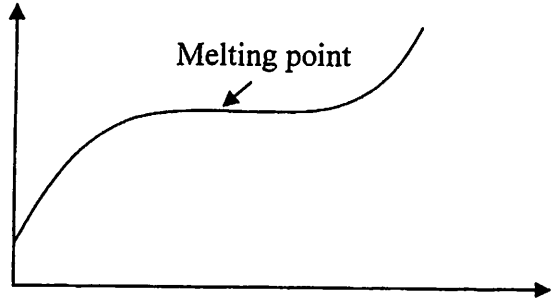




PEPERIKSAAN PERTENGAHAN TAHUN
TINGKATAN 4 2011
4541/3 CHEMISTRY
Paper 3

Question	Rubric	Score						
1(a)	Able to write all the temperature readings accurately with one decimal places. Answer:	3						
	<table border="1"> <thead> <tr> <th>Time/ minute</th> <th>Temperature, °C</th> </tr> </thead> <tbody> <tr> <td>4</td> <td>82.0</td> </tr> <tr> <td>6</td> <td>102.0</td> </tr> </tbody> </table>		Time/ minute	Temperature, °C	4	82.0	6	102.0
	Time/ minute		Temperature, °C					
	4	82.0						
	6	102.0						
Able to write all the temperature readings correctly without decimal places	2							
Able to write any one temperature reading correctly without decimal places Sample answer : 82 // 102	1							
No response given/ wrong response	0							

Question	Rubric	Score
1(b)	Able to draw the graph correctly <ol style="list-style-type: none"> Axis x : time/ minute and axis y : temperature, °C Consistent scale and the graph half of graph paper All the points are transferred correctly Correct curve and smooth 	3
	Able to draw the graph incorrectly <ol style="list-style-type: none"> Axis x : time and axis y : temperature, Consistent scale At least 6 points are transferred correctly Correct curve and smooth 	2
	Able to state the idea to draw the graph <ol style="list-style-type: none"> Draw the axis x and y Correct curve 	1
	No response given/ wrong response	0

Question	Rubric	Score
1(c)	<p>Able to determine the melting points correctly</p> <ol style="list-style-type: none"> 1. Show on the graph 2. 82 ° C <p>Sample answer:</p> 	3
	<p>Able to determine the melting points incorrectly</p> <p>Sample answer;</p>  <p style="text-align: center;">or</p> <p style="text-align: center;">82 ° C</p>	2
	<p>Able to state the idea of melting point</p> <p>Sample answer:</p>  <p style="text-align: center;">or</p> <p style="text-align: center;">82</p>	1
	<p>No response or wrong response</p>	0

Question	Rubric	Score
1(d)	Able to state the operational definition of melting point correctly <u>Sample answer:</u> Temperature (does not change)/ constant at interval time// Temperature (does not change)/ constant from 2 minute to 6 minute	3
	Able to state the operational definition of melting point incorrectly <u>Sample answer:</u> Temperature when solid change to liquid// Temperature (does not change)/ constant at certain time	2
	Able to state the idea of operational definition of melting point <u>Sample answer:</u> Solid change to liquid// Point when solid change to liquid	1
	No response given/ wrong response	0

Question	Rubric	Score
1(e)	Able to predict the freezing point correctly with unit. <u>Sample answer:</u> 82 °C	3
	Able to predict the freezing point correctly without unit. <u>Sample answer:</u> 82	2
	Able state an idea to predict <u>Sample answer:</u> Same	1
	No response given / wrong response	0

Question	Rubric	Score						
1(f)	Able to classify all the compounds correctly <u>Sample answer:</u> <table border="1"> <thead> <tr> <th>ionic compounds</th> <th>covalent compound</th> </tr> </thead> <tbody> <tr> <td>Copper(II) nitrate/ Cu(NO₃)₂</td> <td>Carbon dioxide/ CO₂</td> </tr> <tr> <td>Zinc sulphate/ ZnSO₄</td> <td>Tetrachloromethane/ CCl₄</td> </tr> </tbody> </table>	ionic compounds	covalent compound	Copper(II) nitrate/ Cu(NO ₃) ₂	Carbon dioxide/ CO ₂	Zinc sulphate/ ZnSO ₄	Tetrachloromethane/ CCl ₄	3
	ionic compounds	covalent compound						
	Copper(II) nitrate/ Cu(NO ₃) ₂	Carbon dioxide/ CO ₂						
	Zinc sulphate/ ZnSO ₄	Tetrachloromethane/ CCl ₄						
Able to classify any three of compound correctly	2							
Able to classify any two of compound correctly or give opposite answer. <u>Sample answer:</u> <table border="1"> <thead> <tr> <th>ionic compounds</th> <th>covalent compound</th> </tr> </thead> <tbody> <tr> <td>Carbon dioxide/ CO₂</td> <td>Copper(II) nitrate/ Cu(NO₃)₂</td> </tr> <tr> <td>Tetrachloromethane/ CCl₄</td> <td>Zinc sulphate/ ZnSO₄</td> </tr> </tbody> </table>	ionic compounds	covalent compound	Carbon dioxide/ CO ₂	Copper(II) nitrate/ Cu(NO ₃) ₂	Tetrachloromethane/ CCl ₄	Zinc sulphate/ ZnSO ₄	1	
ionic compounds	covalent compound							
Carbon dioxide/ CO ₂	Copper(II) nitrate/ Cu(NO ₃) ₂							
Tetrachloromethane/ CCl ₄	Zinc sulphate/ ZnSO ₄							
No response given/ wrong response	0							

Question	Rubric	Score								
2(a)	Able to construct a table to record the data that contain: <ol style="list-style-type: none"> 1. Correct titles 2. Correct readings with two decimal places 3. Correct unit <u>Sample answer:</u> <table border="1"> <thead> <tr> <th>Apparatus</th> <th>Mass, g</th> </tr> </thead> <tbody> <tr> <td>Crucible + lid</td> <td>14.63</td> </tr> <tr> <td>Crucible + lid + magnesium</td> <td>17.03</td> </tr> <tr> <td>Crucible + lid + magnesium oxide</td> <td>18.63</td> </tr> </tbody> </table>	Apparatus	Mass, g	Crucible + lid	14.63	Crucible + lid + magnesium	17.03	Crucible + lid + magnesium oxide	18.63	3
Apparatus	Mass, g									
Crucible + lid	14.63									
Crucible + lid + magnesium	17.03									
Crucible + lid + magnesium oxide	18.63									

Question	Rubric	Score								
	<p>Able to construct a less accurate table to record the data that contain:</p> <ol style="list-style-type: none"> 1. Correct titles 2. Correct readings 3. Without unit <p><u>Sample answer:</u></p> <table border="1"> <thead> <tr> <th>Apparatus</th> <th>Mass</th> </tr> </thead> <tbody> <tr> <td>Crucible + lid</td> <td>14.6303</td> </tr> <tr> <td>Crucible + lid + magnesium</td> <td>17.0303</td> </tr> <tr> <td>Crucible + lid + magnesium oxide</td> <td>18.6303</td> </tr> </tbody> </table>	Apparatus	Mass	Crucible + lid	14.6303	Crucible + lid + magnesium	17.0303	Crucible + lid + magnesium oxide	18.6303	2
Apparatus	Mass									
Crucible + lid	14.6303									
Crucible + lid + magnesium	17.0303									
Crucible + lid + magnesium oxide	18.6303									
	Able to construct a table to record the data that contain at least one title/reading	1								
	No response given/ wrong response	0								

Question	Rubric	Score
2(b)	<p>Able to state all the observation correctly.</p> <p><u>Sample answer:</u></p> <ol style="list-style-type: none"> 1. White solid// white fumes 2. Reading of digital balance increase 	3
	<p>Able to state any one observation correctly.</p> <p><u>Sample answer:</u></p> <p>White solid// white fumes or</p> <p>Reading of digital balance increase</p>	2
	<p>Able to give an idea of observation.</p> <p><u>Sample answer:</u></p> <p>Magnesium oxide// Magnesium change// 17.0303 change to 18.6303</p>	1
	No response given / wrong response	0

Question	Rubric	Score
2(c)	Able to give the inference correctly. <u>Sample answer:</u> Magnesium oxide formed // magnesium reacts with oxygen.	3
	Able to give inference less accurately. <u>Sample answer:</u> Metal changed to metal oxide	2
	Able to give an idea of inference. <u>Sample answer:</u> Magnesium changed.	1
	No response given / wrong response	0

Question	Rubric	Score												
2(d)	Able to calculate the mass of magnesium and oxygen, number of moles of magnesium and oxygen and write the empirical formula of magnesium oxide correctly. <u>Sample answer:</u>	3												
	<table border="1"> <thead> <tr> <th></th> <th>Mg</th> <th>O</th> </tr> </thead> <tbody> <tr> <td>(i) Mass (g)</td> <td>$17.03 - 14.63 = 2.4 \text{ g}$</td> <td>$18.63 - 17.03 = 1.6 \text{ g}$</td> </tr> <tr> <td>(ii) Number of moles (mol)</td> <td>$2.4/24 = 0.1$</td> <td>$1.6/16 = 0.1$</td> </tr> <tr> <td>(iii) Empirical formula : MgO</td> <td></td> <td></td> </tr> </tbody> </table>			Mg	O	(i) Mass (g)	$17.03 - 14.63 = 2.4 \text{ g}$	$18.63 - 17.03 = 1.6 \text{ g}$	(ii) Number of moles (mol)	$2.4/24 = 0.1$	$1.6/16 = 0.1$	(iii) Empirical formula : MgO		
			Mg	O										
	(i) Mass (g)		$17.03 - 14.63 = 2.4 \text{ g}$	$18.63 - 17.03 = 1.6 \text{ g}$										
	(ii) Number of moles (mol)		$2.4/24 = 0.1$	$1.6/16 = 0.1$										
(iii) Empirical formula : MgO														
Able to calculate the mass of magnesium and oxygen correctly.	2													
Able to give an idea of empirical formula of magnesium oxide. <u>Sample answer:</u> MgO	1													
No response given / wrong response	0													

Question	Rubric	Score
2(e)	Able to write the chemical equation correctly. <u>Sample answer:</u> $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$	3
	Able to write the chemical equation less correctly. <u>Sample answer:</u> $\text{Mg} + \text{O}_2 \rightarrow \text{MgO}$	2
	Able to state an idea of writing chemical equation. <u>Sample answer:</u> $\text{Mg} + \text{O}_2 // \text{MgO} // \text{Magnesium} + \text{oxygen} \rightarrow \text{magnesium oxide}$	1
	No response given / wrong response	0

Question Number	Rubric	Score
3(a)	Able to state the problem statement correctly <u>Sample answer:</u> Does the different type of (alkali metals)/ (Group 1)/(lithium, sodium and potassium) affect the reactivity with oxygen?	3
	Able to state the problem statement less accurately <u>Sample answer:</u> Does the different type of (alkali metals)/ (Group 1)/(lithium, sodium and potassium) affect the reactivity? // To investigate/ compare/ study the reactivity of Group 1 elements/ lithium, sodium and potassium with oxygen.	2
	Able to give an idea of the problem statement. <u>Sample answer:</u> To investigate/ compare/ study the reaction of Group 1 elements/ lithium, sodium and potassium	1
	No response or wrong response	0

Question Number	Rubric	Score
3(b)	Able to state the three variables correctly <u>Sample answer:</u> Manipulated variable: Elements of Group 1// Lithium, sodium, potassium// alkali metal Responding variable: Reactivity// vigorous reaction// intensity of flame Constant variable: Size of alkali metal// oxygen	3
	Able to state any two variables correctly	2
	Able to state any one variable correctly	1
	No response or wrong response	0

Question Number	Rubric	Score
3(c)	Able to state the relationship correctly between the manipulated variable and the responding variable with direction. <u>Sample answer:</u> (The lower/ higher the position of metal in)/ (going down/ up) Group 1, the more/ less reactive is the metal in reaction with oxygen.	3
	Able to state the relationship between the manipulated variable and the responding variable with direction <u>Sample answer:</u> The more/ less reactive is the metal in reaction with oxygen, (the lower/ higher the position of metal in)/ (going down/ up) Group 1 // (The lower/ higher the position of metal in)/ (going down/ up) Group 1, the more/ less reactive is the metal// vice versa //Potassium more reactive when react with oxygen, followed by sodium and lithium // <u>Reactivity increases when going down/ up the Group 1</u>	2
	Able to state the idea of hypothesis <u>Sample answer:</u> Alkali metals have different reactivity	1
	No response or wrong response	0

Question Number	Rubric	Score
3(d)	Able to give complete list of substances and apparatus <u>Sample answer:</u> Substances Lithium, sodium, potassium, oxygen, filter paper Apparatus Gas jar, gas jar spoons, knife, forceps/ tongs/ scissors	3
	Able to give at least two substances and at least two apparatus	2
	Able to give at least one substance and at least one apparatus	1
	No response or wrong response	0

Question Number	Rubric	Score
3(e)	Able to list all the steps correctly <u>Sample answer:</u> <ol style="list-style-type: none"> 1. Fill the gas jar with oxygen. 2. Cut a piece of lithium. 3. Dry the lithium using filter paper. 4. Put the lithium in a gas jar spoon. 5. Heat the lithium until it burns. 6. Transfer the gas jar spoon quickly into a gas jar. 7. Record all the changes/ observation. 8. Repeat (steps 1 – 7)/(experiment) using sodium and potassium 	3
	Able to list down steps 2, 4, 5, 6 and 8	2
	Able to give an idea for step 5	1
	No response or wrong response	0

Question Number	Rubric	Score								
3(f)	Able to tabulate the data with the following aspects <ol style="list-style-type: none"> 1. Correct titles 2. Complete list of elements <u>Sample answer:</u> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Elements/ metals/ Group 1</th> <th>Observation/ Reactivity</th> </tr> </thead> <tbody> <tr> <td>Lithium</td> <td></td> </tr> <tr> <td>Sodium</td> <td></td> </tr> <tr> <td>Potassium</td> <td></td> </tr> </tbody> </table>	Elements/ metals/ Group 1	Observation/ Reactivity	Lithium		Sodium		Potassium		2
	Elements/ metals/ Group 1	Observation/ Reactivity								
	Lithium									
Sodium										
Potassium										
Able to construct a table with <ol style="list-style-type: none"> 1. At least one title 2. Incomplete list of elements <u>Sample answer:</u> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Element</th> <th>Observation</th> </tr> </thead> <tbody> <tr> <td>Lithium</td> <td></td> </tr> </tbody> </table>	Element	Observation	Lithium		1					
Element	Observation									
Lithium										
No response or wrong response	0									

END OF MARKING SCHEME