



SEKTOR PENGURUSAN AKADEMIK
JABATAN PELAJARAN NEGERI SABAH

PEPERIKSAAN EXCEL II
SIJIL PELAJARAN MALAYSIA 2009
Chemistry
Kertas 3
Peraturan Pemarkahan

4541/3(PP)

UNTUK KEGUNAAN PEMERIKSA SAHAJA

AMARAN

Peraturan pemarkahan ini **SULIT**. Kegunaannya khusus untuk pemeriksa yang berkenaan sahaja. Sebarang maklumat dalam peraturan pemarkahan ini tidak boleh dimaklumkan kepada sesiapa. Peraturan pemarkahan ini tidak boleh dikeluarkan dalam apa – apa bentuk media.

Peraturan pemarkahan ini mengandungi 12 halaman bercetak

Question	Rubric	Score
1(a)	<p>Able to state all the variables correctly</p> <p>(i) Manipulated variable Type of metal / electrode // negative terminal</p> <p>(ii) Responding variable Voltmeter reading // Potential difference</p> <p>(iii) Constant variable Concentration of copper(II) sulphate solution //Copper(II) sulphate solution // Electrolyte</p>	3
	Able to state any two correct variables	2
	Able to state any one correct variable	1
	No response or wrong response	0
1(b)	<p>Able to state the relationship correctly between the manipulated variable and the responding variable with direction.</p> <p><u>Sample answers</u></p> <p>The further the position between two metals in the electrochemical series, the higher the potential difference / voltmeter reading.</p>	3
	<p>Able to state the relationship between the manipulated variable and responding variable less accurately.</p> <p><u>Sample answer</u></p> <p>The further the position between two metals, the higher / lower the potential difference / voltmeter reading //</p>	2
Question	Rubric	Score
	The potential difference increases when the distance between two metals increases.	

	<p>Able to state the idea of hypothesis</p> <p><u>Sample answer</u></p> <p>The voltmeter reading is different when different pairs of metals are used.</p>	1
	No response or wrong response.	0
1(c)	<p>Able to state all the observations correctly.</p> <p>(i) Becomes thinner / shorter // mass decrease</p> <p>(ii) Becomes thicker / longer // mass increase</p> <p>(iii) Blue colour becomes paler / lighter / colourless</p>	3
	Able to state any two of the observations correctly.	2
	Able to state any one of the observations correctly	1
	No response or wrong response.	0
1(d)	<p>Able to give all the voltmeter readings correctly.</p> <p>Magnesium and copper pair Voltmeter reading: <u>2.6 V</u></p> <p>Iron and copper pair Voltmeter reading: <u>0.7 V</u></p> <p>Zinc and copper pair Voltmeter reading: <u>1.1 V</u></p>	3
Question	Rubric	Score
	<p>Aluminium and copper pair Voltmeter reading: <u>1.9 V</u></p>	

	<p>Able to give any two / three voltmeter readings correctly // Able to give all voltmeter readings correctly without unit.</p>	2										
	<p>Able to give any one voltmeter reading correctly with unit / without unit.</p> <p>No response or wrong response.</p>	1 0										
1(e)	<p>Able to construct a table to record the voltmeter readings for the experiments with the following aspects</p> <ol style="list-style-type: none"> 1. Correct titles 2. Readings and units <p><u>Sample answer</u></p> <table border="1" data-bbox="344 958 1212 1373"> <thead> <tr> <th data-bbox="344 958 922 1070">Pairs of metals/elements/electrode // Negative terminal</th> <th data-bbox="922 958 1212 1070">Voltmeter reading / Potential difference (V)</th> </tr> </thead> <tbody> <tr> <td data-bbox="344 1070 922 1149">Magnesium and copper // Magnesium</td> <td data-bbox="922 1070 1212 1149"></td> </tr> <tr> <td data-bbox="344 1149 922 1227">Iron and copper // Iron</td> <td data-bbox="922 1149 1212 1227"></td> </tr> <tr> <td data-bbox="344 1227 922 1305">Zinc and copper // Zinc</td> <td data-bbox="922 1227 1212 1305"></td> </tr> <tr> <td data-bbox="344 1305 922 1373">Aluminium and copper // Aluminium</td> <td data-bbox="922 1305 1212 1373"></td> </tr> </tbody> </table>	Pairs of metals/elements/electrode // Negative terminal	Voltmeter reading / Potential difference (V)	Magnesium and copper // Magnesium		Iron and copper // Iron		Zinc and copper // Zinc		Aluminium and copper // Aluminium		3
Pairs of metals/elements/electrode // Negative terminal	Voltmeter reading / Potential difference (V)											
Magnesium and copper // Magnesium												
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Question	Rubric	Score
	<p>Able to construct a less accurate table to record the voltmeter readings for the experiments with the following aspects</p> <ol style="list-style-type: none"> 1. titles 2. Readings 	2
	<p>Able to construct a table with at least one title / readings.</p>	1
	<p>No response or wrong response</p>	0
1(f)	<p>Able to write correct operational definition.</p> <p><u>Sample answer</u></p> <p>The deflection of the voltmeter pointer in the direction away from the metal / electrode indicates that the metal / electrode releases electron . // The greater the potential difference / voltmeter reading indicates that the distance between the two metals is further in the electrochemical series.</p>	3
	<p>Able to write less accurate operational definition.</p> <p><u>Sample answer</u></p> <p>Voltmeter reading shows there is electron flowing.</p>	2
	<p>Able to give the idea of operational definition.</p> <p><u>Sample answer</u></p>	1
	<p>Voltmeter reading shows there is reaction.</p> <p>No response or wrong response.</p>	0

Question	Rubric	Score
1(g)	Magnesium. Magnesium is the furthest from copper in the electrochemical series.	3
	Magnesium. Magnesium is the furthest from copper .	2
	Magnesium.	1
	No response or wrong response.	0
1(h)	From zinc to copper. Zinc has a greater tendency to donate electrons. // Zinc is higher than copper in the electrochemical series.	3
	From zinc to copper. Zinc is higher than copper.	2
	From zinc to copper.	1
	No response or wrong response.	0

Question	Rubric	Score
	Able to give correct value and electrode.	2
	Able to give any one of the following: (I) correct value with unit / without unit (II) electrode.	1
	No response or wrong response.	0
1(k)	(I) It enables the terminals of voltaic cells to be determined. (II) It enables the cell voltage for a pair of metals to be determined. (III) It enables the potential of a metal to displace another metal from its salt solution to be predicted. Able to suggest all of the above.	3
	Able to suggest any two of the above.	2
	Able to suggest any one of the above.	1
	No response or wrong response.	0

Question	Rubric	Score
2(a)	<p>Able to state the problem statement correctly.</p> <p><u>Sample answer</u></p> <p>How does the oxidizing power of chlorine differ from that of bromine and iodine?</p>	3
	<p>Able to state the problem statement less accurately.</p> <p><u>Sample answer</u></p> <p>To study / investigate the oxidizing power of chlorine as compared to bromine and iodine.</p>	2
	<p>Able to give an idea of the aim of the experiment // problem statement.</p> <p><u>Sample answer</u></p> <p>To study the reaction of chlorine, bromine and iodine.</p>	1
	<p>No response or wrong response.</p>	0
2(b)	<p>Able to state the three variables correctly</p> <p><u>Sample answer</u></p> <p>Manipulated variable Halide solution // Potassium bromide solution, Potassium iodide solution.</p> <p>Responding variable Changes in colour of solution // occurrence of displacement reaction</p> <p>Constant variable Chlorine water</p>	3
	<p>Able to state any two variables correctly</p>	2

Question	Rubric	Score
	Able to state any one variable correctly	1
	No response or wrong response	0
2(c)	<p>Able to state the hypothesis correctly</p> <p><u>Sample answer</u></p> <p>The more electronegative the halogen is, the stronger will be its oxidizing power // Chlorine is the strongest oxidizing agent compared to bromine, followed by iodine.</p>	3
	<p>Able to state the hypothesis less accurately.</p> <p><u>Sample answer</u></p> <p>Chlorine is a strong oxidizing agent compared to bromine and iodine.</p>	2
	<p>Able to state the idea of hypothesis</p> <p><u>Sample answer</u></p> <p>Halogen / Chlorine, bromine, and iodine has different oxidizing power.</p>	1
	No response or wrong response	0

Question	Rubric	Score
2(d)	<p>Able to give complete list of substances and apparatus</p> <p><u>Sample answer</u></p> <p>Substances</p> <p>Chlorine water, potassium bromide solution, potassium iodide solution, 1,1,1-trichloroethane liquid</p> <p>Apparatus</p> <p>Test tube, Test tube rack, measuring cylinder</p>	3
	Able to give at least two substances and at least one apparatus	2
	Able to give at least one substance and at least one apparatus	1
	No response or wrong response	0
2(e)	<p>Able to list all the steps correctly</p> <p><u>Sample answer</u></p> <ol style="list-style-type: none"> 1 Put / pour 2 cm³ of potassium bromide solution into a test tube. 2. Add 2 cm³ of chlorine water to the test tube and shake the mixture thoroughly. 3. Add 2 cm³ of 1,1,1-trichloroethane, CH_3CCl_3 to the test tube. 4. Shake the mixture thoroughly and leave it on the test tube rack.. 5. After a few seconds, note the colour of the aqueous and the 1,1,1-trichloroethane, CH_3CCl_3 layers. 6. Repeat steps 1 to 5, using potassium iodide solution to replace potassium bromide solution. 7. Record all the observations. 	3

Question	Rubric	Score											
	Able to list down steps 1, 2, 6, 7	2											
	Able to give an idea of step 1 and 2	1											
	No response or wrong response.	0											
2(f)	<p>Able to tabulate the data with the following aspects</p> <p>I Correct titles II Complete list of halide solution</p> <p><u>Sample answer</u></p> <table border="1" data-bbox="352 927 1155 1375"> <thead> <tr> <th data-bbox="352 927 619 1151" rowspan="2">Halide solution</th> <th colspan="2" data-bbox="619 927 1155 1039">Observation</th> </tr> <tr> <th data-bbox="619 1039 887 1151">Colour of aqueous layer</th> <th data-bbox="887 1039 1155 1151">Colour of 1,1,1-trichloroethane layer</th> </tr> </thead> <tbody> <tr> <td data-bbox="352 1151 619 1263">Potassium bromide</td> <td data-bbox="619 1151 887 1263"></td> <td data-bbox="887 1151 1155 1263"></td> </tr> <tr> <td data-bbox="352 1263 619 1375">Potassium iodide</td> <td data-bbox="619 1263 887 1375"></td> <td data-bbox="887 1263 1155 1375"></td> </tr> </tbody> </table>	Halide solution	Observation		Colour of aqueous layer	Colour of 1,1,1-trichloroethane layer	Potassium bromide			Potassium iodide			2
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		Colour of aqueous layer	Colour of 1,1,1-trichloroethane layer										
Potassium bromide													
Potassium iodide													
<p>Able to construct a table with</p> <p>I at least one suitable title II incomplete list of halide solution</p> <p><u>Sample answer</u></p> <table border="1" data-bbox="352 1778 1155 1854"> <thead> <tr> <th data-bbox="352 1778 754 1816">Solution</th> <th data-bbox="754 1778 1155 1816">Observation</th> </tr> </thead> <tbody> <tr> <td data-bbox="352 1816 754 1854">Pottasium bromide</td> <td data-bbox="754 1816 1155 1854"></td> </tr> </tbody> </table>	Solution	Observation	Pottasium bromide		1								
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