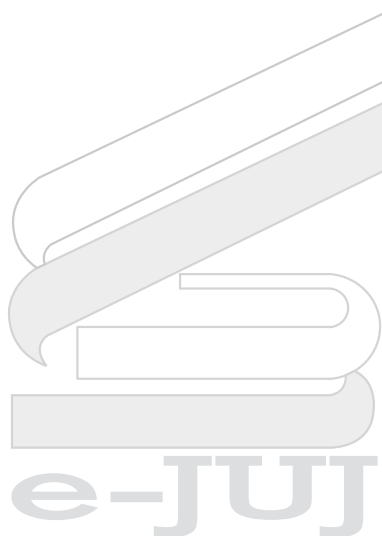


MARKING SCHEME PAPER 3 SET 2 CHEMISTRY JUJ PAHANG 2018

Question Number	Rubric	Score
1(a)	<p>Able to state all the voltmeter readings accurately with correct unit and 1 decimal place</p> <p>Sample answer: L and Cu : 1.2 V M and Cu : 1.8 V N and Cu : 0.4 V Q and Cu : 1.4 V R and Cu : 2.6 V</p>	3
	<p>Able to state all the voltmeter readings accurately without unit// . // more than 1 decimal place</p> <p>Sample answer: L and Cu : 1.2 / 1.20V M and Cu : 1.8 / 1.80 V N and Cu : 0.4 / 0.40V Q and Cu : 1.4 / 1.40V R and Cu : 2.6 / 2.60V</p> <p>// any 3 accurate reading</p>	2
	Able to record at least 2 reading	1
	<i>No response or wrong response</i>	0



Question Number	Rubric	Score												
1(b)	<p>Able to construct a table to record the voltmeter reading for each pair of metals that contain:</p> <ol style="list-style-type: none"> 1. Correct titles with unit 2. Readings <p><u>Sample answer:</u></p> <table border="1" data-bbox="477 512 1060 772"> <thead> <tr> <th>Pairs of metals</th> <th>Voltage / V</th> </tr> </thead> <tbody> <tr> <td>L and Cu</td> <td>1.2</td> </tr> <tr> <td>M and Cu</td> <td>1.8</td> </tr> <tr> <td>N and Cu</td> <td>0.4</td> </tr> <tr> <td>Q and Cu</td> <td>1.4</td> </tr> <tr> <td>R and Cu</td> <td>2.6</td> </tr> </tbody> </table>	Pairs of metals	Voltage / V	L and Cu	1.2	M and Cu	1.8	N and Cu	0.4	Q and Cu	1.4	R and Cu	2.6	3
Pairs of metals	Voltage / V													
L and Cu	1.2													
M and Cu	1.8													
N and Cu	0.4													
Q and Cu	1.4													
R and Cu	2.6													
	<p>Able to construct a less accurate table that contains:</p> <ol style="list-style-type: none"> 1. Titles without unit 2. Readings <table border="1" data-bbox="477 919 1060 1150"> <thead> <tr> <th>Pairs of metals</th> <th>Voltage</th> </tr> </thead> <tbody> <tr> <td>L and Cu</td> <td>1.2</td> </tr> <tr> <td>M and Cu</td> <td>1.8</td> </tr> <tr> <td>N and Cu</td> <td>0.4</td> </tr> <tr> <td>Q and Cu</td> <td>1.4</td> </tr> <tr> <td>R and Cu</td> <td>2.6</td> </tr> </tbody> </table>	Pairs of metals	Voltage	L and Cu	1.2	M and Cu	1.8	N and Cu	0.4	Q and Cu	1.4	R and Cu	2.6	2
Pairs of metals	Voltage													
L and Cu	1.2													
M and Cu	1.8													
N and Cu	0.4													
Q and Cu	1.4													
R and Cu	2.6													
	Able to construct a table with at least one title / reading	1												
	No response or wrong response	0												



Question Number	Rubric	Score
1(c)	Able to state all the three variables correctly <u>Sample answer:</u> Manipulated variable: Pairs of metals // L, M, N, Q, R and Cu Responding variable : Voltmeter / voltage reading//potential difference Constant variable : copper electrode, copper(II) sulphate Solution//concentration of copper(II) sulphate	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
1(d)	Able to state the relationship between the manipulated variable and the responding variable with direction . <u>Sample answer:</u> The further/nearer/closer the distance of the pair of metals/ two metals in the electrochemical series , the voltage/voltmeter reading becomes greater/smaller If opposite - score 2	3
	Able to state the idea of hypothesis Sample answer: Different metals shows different voltmeter reading // voltage change	2
	Able to state the idea of hypothesis Sample answer: Different voltmeter reading // voltage	1
	No response or wrong response	0

Question Number	Rubric	Score
1(e)	Able to arrange all the metals accurately in ascending order Sample answer: Cu, N, L, Q, M, R	3
	Able to arrange at least 3 metals correctly Sample answer: Cu, N, L , R, M, Q // N, L, Q , Cu, M, R // L, Q, M , Cu, R, N //	2
	Able to arrange at least 2 metals correctly Sample answer: Cu, N , M, Q, L, R a: reverse arrangement //	1
	No response or wrong response	0

Question Number	Rubric	Score								
1(f)	Able to predict the voltage of the cells accurately in 1 decimal place <table border="1" data-bbox="358 1087 1179 1241"> <thead> <tr> <th>Pair of metals</th> <th>Voltage / V</th> </tr> </thead> <tbody> <tr> <td>M and R</td> <td>0.8</td> </tr> <tr> <td>M and L</td> <td>0.6</td> </tr> <tr> <td>N and Q</td> <td>1.0</td> </tr> </tbody> </table>	Pair of metals	Voltage / V	M and R	0.8	M and L	0.6	N and Q	1.0	3
	Pair of metals	Voltage / V								
	M and R	0.8								
	M and L	0.6								
	N and Q	1.0								
Able to predict at least 2 reading accurately Or more than 1 decimal places	2									
Able to predict at least 1 reading accurately	1									
No response or wrong response	0									

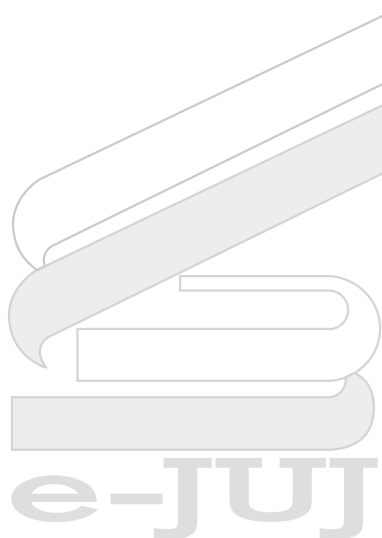


Question Number	Rubric	Score								
1(g)	Able to classify all the substance correctly Sample answer:	3								
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; text-align: center;">Electrolyte <i>Elektrolit</i></th> <th style="width: 50%; text-align: center;">Non-electrolyte <i>Bukan elektrolit</i></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Sodium chloride <i>Natrium klorida</i></td> <td style="text-align: center;">Tetrachloromethane <i>Tetraklorometana</i></td> </tr> <tr> <td style="text-align: center;">Silver nitrate <i>Argentum nitrat</i></td> <td style="text-align: center;">Chloroform Klorofom</td> </tr> <tr> <td style="text-align: center;">Hydrochloric acid <i>Asid hidroklorik</i></td> <td style="text-align: center;">Glucose <i>Glukosa</i></td> </tr> </tbody> </table>		Electrolyte <i>Elektrolit</i>	Non-electrolyte <i>Bukan elektrolit</i>	Sodium chloride <i>Natrium klorida</i>	Tetrachloromethane <i>Tetraklorometana</i>	Silver nitrate <i>Argentum nitrat</i>	Chloroform Klorofom	Hydrochloric acid <i>Asid hidroklorik</i>	Glucose <i>Glukosa</i>
	Electrolyte <i>Elektrolit</i>		Non-electrolyte <i>Bukan elektrolit</i>							
	Sodium chloride <i>Natrium klorida</i>		Tetrachloromethane <i>Tetraklorometana</i>							
	Silver nitrate <i>Argentum nitrat</i>		Chloroform Klorofom							
Hydrochloric acid <i>Asid hidroklorik</i>	Glucose <i>Glukosa</i>									
Able to classify at least 2 electrolyte and 2 non-electrolyte correctly	2									
Able to classify at least 1 electrolyte and 1 non electrolyte correctly	1									
No response or wrong response	0									

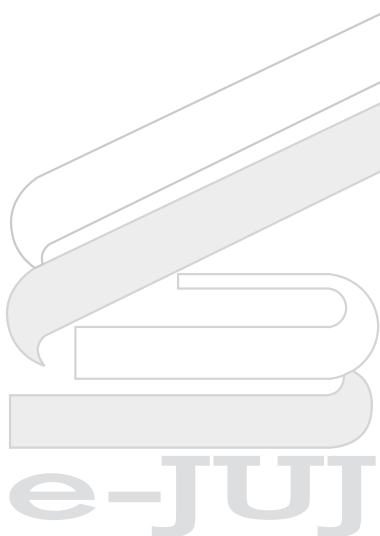


Question Number	Rubric	Score										
2(a)	<p>Able to state all observations and corresponding inferences correctly # a: <i>matching correctly inferences from less accurate observation.</i></p> <p>Sample answer</p> <table border="1" data-bbox="321 495 1325 1346"> <thead> <tr> <th data-bbox="321 495 721 558">Observation</th> <th data-bbox="721 495 1325 558">Inference</th> </tr> </thead> <tbody> <tr> <td data-bbox="321 558 721 705">1. Low intensity of blue spot</td> <td data-bbox="721 558 1325 705"> Low concentration of iron (II) /Fe²⁺ ions formed/produced // iron/Fe is less rusted/corroded/oxidised </td> </tr> <tr> <td data-bbox="321 705 721 999">2. No blue spot</td> <td data-bbox="721 705 1325 999"> Iron (II) /Fe²⁺ ions are not formed/produced // iron/ Fe does not rust/corrode/oxidized // position of magnesium is more higher than iron in the electrochemical series //magnesium is more electropositive than iron </td> </tr> <tr> <td data-bbox="321 999 721 1125">3. High intensity of blue spot</td> <td data-bbox="721 999 1325 1125"> High concentration of Iron (II) /Fe²⁺ ions formed/produced // iron/ Fe is more rusted/corroded/oxidised </td> </tr> <tr> <td data-bbox="321 1125 721 1346">4. Low intensity of blue spot</td> <td data-bbox="721 1125 1325 1346"> Low concentration of Iron (II) /Fe²⁺ ions formed/produced // iron/Fe is less rusted/corroded/oxidized // position of Tin is less higher than iron in the electrochemical series. //tin is more electropositive than iron </td> </tr> </tbody> </table>	Observation	Inference	1. Low intensity of blue spot	Low concentration of iron (II) /Fe ²⁺ ions formed/produced // iron/Fe is less rusted/corroded/oxidised	2. No blue spot	Iron (II) /Fe ²⁺ ions are not formed/produced // iron/ Fe does not rust/corrode/oxidized // position of magnesium is more higher than iron in the electrochemical series //magnesium is more electropositive than iron	3. High intensity of blue spot	High concentration of Iron (II) /Fe ²⁺ ions formed/produced // iron/ Fe is more rusted/corroded/oxidised	4. Low intensity of blue spot	Low concentration of Iron (II) /Fe ²⁺ ions formed/produced // iron/Fe is less rusted/corroded/oxidized // position of Tin is less higher than iron in the electrochemical series. //tin is more electropositive than iron	6
Observation	Inference											
1. Low intensity of blue spot	Low concentration of iron (II) /Fe ²⁺ ions formed/produced // iron/Fe is less rusted/corroded/oxidised											
2. No blue spot	Iron (II) /Fe ²⁺ ions are not formed/produced // iron/ Fe does not rust/corrode/oxidized // position of magnesium is more higher than iron in the electrochemical series //magnesium is more electropositive than iron											
3. High intensity of blue spot	High concentration of Iron (II) /Fe ²⁺ ions formed/produced // iron/ Fe is more rusted/corroded/oxidised											
4. Low intensity of blue spot	Low concentration of Iron (II) /Fe ²⁺ ions formed/produced // iron/Fe is less rusted/corroded/oxidized // position of Tin is less higher than iron in the electrochemical series. //tin is more electropositive than iron											
	Able to state 6 observations and corresponding inferences correctly	5										
	Able to state 4 observations and corresponding inferences correctly//able to state 4 observations correctly	4										
	Able to state 3 observations correctly	3										
	Able to state 2 observation and corresponding inferences correctly	2										
	Able to state any 1 observations or inferences correctly	1										
	No response or wrong response	0										

Question Number	Rubric	Score
2(b)	<p>Able to give operational definition accurately *what is observed + direction + where it is done *direction :more /increase-corak meningkat//less/decrease</p> <p>Sample answer 1. intensity of blue colour increase when iron is coiled/in contact with less electropositive metal in a mixture/medium of agar-agar</p> <p>// more blue colour formed when iron is in contact /is coiled with less electropositive metal in /a mixture/medium of agar-agar</p> <p>a : direction -more/intensity of blue colour increase/decrease</p>	3
	<p>Able to give the operational definition correctly with at least 2 of the information:</p> <p>1. observation : blue color is formed 2. where it is done: mixture //medium of agar-agar 3. direction</p>	2
	<p>Able to give an idea of operational definition</p> <p>Sample answer At least one of the information // Blue colour/colouration // statement of hypothesis</p>	1
	No response or wrong response	0



Question Number	Rubric	Score
2(c)	<p>Able to state the relationship between the time taken and the amount of rust formed accurately</p> <ol style="list-style-type: none"> 1. Time taken 2. Formation of rust 3. Comparison <p>Sample answer: The longer the time taken , the more the rust formed // the rust formed is greater /bigger/larger when the time taken is longer // the rust formed in two days is more/bigger/greater/larger than one days</p>	3
	<p>Able to state relationship between the time taken and the amount of rust form <i>less</i> correctly and without comparisan</p> <p>Sample answer The rust formed is bigger/greater/larger/more</p> <p>// The rust formed is directly propotional to the time taken</p>	2
	<p>Able to state any idea of relationship between time taken and rust formed</p> <p>Sample answer The rust is formed/ change/rust is small/less</p>	1
	No response or wrong response	0



Question No.	Rubric	Score
3(a)	Able to give the aim of the experiment correctly <u>Sample answers</u> To investigate the effect of temperature on the rate of reaction If <i>problem statement is written</i> –score 1	2
	Able to state the aim of the experiment less correctly <u>Sample answer</u> To investigate the rate of reaction	1
	No response or wrong response	0
3(b)	Able to state the three variables correctly Manipulated variable : Temperature Responding variable : Rate of reaction//time taken for 'X' cannot be seen Constant variables: Volume and concentration of acid //concentration of acid//type of acid//acid	3
	Able to state any two variables correctly	2
	Able to state any one variable correctly	1
	No response or wrong response	0
3(c)	Able to state the relationship between the manipulated variable and the responding variable with direction correctly. <u>Sample answer</u> 1. When the temperature increases, the rate of reaction increase 2. When the temperature increase ,time take for 'X' disappear decrease	3
	Able to state the relationship between the manipulated variable and the responding variable and direction less correctly (<i>no direction</i>) <u>Sample answer</u> 1. temperature affect the rate of reaction 2. temperature affect the time taken for 'X' to disappear	2
	Able to state an idea of hypothesis <u>Sample answer:</u> temperature affects the reaction	1
	No response or wrong response	0

Question No.	Rubric	Score
3(d)	<p>Able to list completely the material/substances and apparatus</p> <p><u>Sample answer:</u></p> <p><u>Materials/substances</u></p> <p>Sodium thiosulphate solution [0.5 – 1.0 moldm⁻³] /dilute (hydrochloric acid//nitric acid//sulphuric acid)</p> <p><u>Apparatus:</u></p> <p>Stopwatch</p> <p>Conical flask</p> <p>Measuring cylinder</p> <p>White tiles/white paper marked with ‘X’</p> <p>Thermometer</p> <p>Wire gauze</p> <p>Tripod stand</p> <p>Bunsen burner</p> <p><i>Rujuk (g/rajah yang berlabel) /prosedur jika tiada dalam senarai : 1 material and 2 apparatus from diagram/ procedure</i></p>	3
	<p>Able to list basic materials and apparatus</p> <p><u>Sample answer:</u></p> <p><u>Materials</u></p> <p>Hydrochloric acid//nitric acid//sulphuric acid</p> <p><u>Apparatus:</u></p> <p>Stopwatch</p> <p>Conical flask/(any suitable container)</p>	2
	<p>Able to give an idea of the materials and apparatus</p> <p><u>Sample answer:</u></p> <p><u>Materials</u></p> <p>Any acid ,any chemical substances</p> <p><u>Apparatus:</u></p> <p>any suitable container</p>	1
	No response or wrong response	0

Question No.	Rubric	Score
3 (e)	<p>Able to state all the steps correctly</p> <p><u>Sample answer:</u></p> <ol style="list-style-type: none"> 1. Pour 50cm³ of 0.1 mol dm³ sodium thiosulphate solution into a conical flask. 2. Record the initial temperature of sodium thiosulphate solution using a thermometer 3. Put/place the conical flask on a white paper marked with 'X' 4. [20-100cm³] of hydrochloric acid is added into the conical flask and the stopwatch is started immediately 5. Swirl the mixture gently and the marked 'X' is viewed from above 6. Stop the stopwatch when 'X' disappear and the time is recorded 7. Step 1-6 are repeated by using temperature 40⁰C,50⁰ C and 60⁰ C. 	3
	Able to state the steps 1,4,6 and 7 correctly	2
	Able to state steps 1 and 4 correctly //the idea mixing any two substances	1
	No response or wrong response	0



Question	Rubric	Score										
3 (f)	<p>Able to present/exhibit a table to record the following items/ information correctly</p> <ol style="list-style-type: none"> 1. time(s)//time(min) 2. temperature($^{\circ}$C) <p><u>Sample answer:</u></p> <table border="1" data-bbox="313 520 781 884"> <thead> <tr> <th>Temperature ($^{\circ}$ C)</th> <th>Time (s)/(min)</th> </tr> </thead> <tbody> <tr> <td>Suhu bilik</td> <td></td> </tr> <tr> <td>40</td> <td></td> </tr> <tr> <td>50</td> <td></td> </tr> <tr> <td>60</td> <td></td> </tr> </tbody> </table>	Temperature ($^{\circ}$ C)	Time (s)/(min)	Suhu bilik		40		50		60		3
Temperature ($^{\circ}$ C)	Time (s)/(min)											
Suhu bilik												
40												
50												
60												
	<p>Able to present/exhibit a table to record the following items/ information correctly</p> <ol style="list-style-type: none"> 1. time 2. temperature 3. minimum one temperature <p><u>Sample answer:</u></p> <table border="1" data-bbox="313 1188 1219 1297"> <thead> <tr> <th>Temperature</th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>Time</td> <td></td> <td></td> </tr> </tbody> </table>	Temperature			Time			2				
Temperature												
Time												
	<p>Able to give an idea on tabulation of data with at least one information and one temperature stated in the table</p> <p><u>Sample answer</u></p> <table border="1" data-bbox="435 1518 1182 1598"> <thead> <tr> <th>Time</th> <th></th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Time				1						
Time												
	No response or wrong response	0										

END OF MARKING SCHEME

