

Modul Latihan Berfokus Pulau Pinang SPM 2020
Set 1 (Cemerlang)

ANSWERS

Que	Rubric	Score												
1(a)	<p><i>Able to state all the voltmeter readings accurately with correct unit and 1 decimal place</i></p> <p>L dan Cu : 1.2V M dan Cu : 1.8V N dan Cu : 0.4V Q dan Cu : 1.4V R dan Cu : 2.6V</p>	3												
1(b)	<p><i>Able to construct a table to record the voltmeter reading for each pair of metals that contain:</i></p> <p>1. Correct titles with unit 2. Readings</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Pasangan logam</th> <th style="text-align: center;">Voltan (V)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">L dan Cu</td> <td style="text-align: center;">1.2</td> </tr> <tr> <td style="text-align: center;">M dan Cu</td> <td style="text-align: center;">1.8</td> </tr> <tr> <td style="text-align: center;">N dan Cu</td> <td style="text-align: center;">0.4</td> </tr> <tr> <td style="text-align: center;">Q dan Cu</td> <td style="text-align: center;">1.4</td> </tr> <tr> <td style="text-align: center;">R dan Cu</td> <td style="text-align: center;">2.6</td> </tr> </tbody> </table>	Pasangan logam	Voltan (V)	L dan Cu	1.2	M dan Cu	1.8	N dan Cu	0.4	Q dan Cu	1.4	R dan Cu	2.6	3
Pasangan logam	Voltan (V)													
L dan Cu	1.2													
M dan Cu	1.8													
N dan Cu	0.4													
Q dan Cu	1.4													
R dan Cu	2.6													
1(c)	<p><i>Able to state all the three variables correctly</i></p> <p>Manipulated variable: Pair of metals Responding variable: Voltmeter reading // potential difference // Voltage Fixed variable: Copper electron // Copper(II) sulphate solution // Concentration of copper(II) sulphate solution</p>	3												
1(d)	<p><i>Able to state the relationship between the manipulated variable and the responding variable with direction.</i></p> <p>The further / nearer the distance between pairs of metals / two metals in electrochemical series, the higher the voltmeter reading / voltage.</p>	3												
1(e)	<p><i>Able to arrange all the metals accurately in ascending order</i></p> <p><u>Sample answer:</u> Cu, N, L, Q, M, R</p>	3												
1(f)	<p><i>Able to predict the voltage of the cells accurately in 1 decimal place</i></p> <p><u>Sample answer:</u></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Pasangan logam</th> <th style="text-align: center;">Voltan (V)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">M dan R</td> <td style="text-align: center;">0.8</td> </tr> <tr> <td style="text-align: center;">M dan L</td> <td style="text-align: center;">0.6</td> </tr> <tr> <td style="text-align: center;">N dan Q</td> <td style="text-align: center;">1.0</td> </tr> </tbody> </table>	Pasangan logam	Voltan (V)	M dan R	0.8	M dan L	0.6	N dan Q	1.0	3				
Pasangan logam	Voltan (V)													
M dan R	0.8													
M dan L	0.6													
N dan Q	1.0													

(g)	<p><i>Able to classify all the substances correctly</i></p> <table border="1"> <thead> <tr> <th>Electrolyte</th> <th>Non- electrolyte</th> </tr> </thead> <tbody> <tr> <td>Sodium chloride</td> <td>Chloroform</td> </tr> <tr> <td>Silver nitrate</td> <td>Glucose</td> </tr> <tr> <td>Hydrochloric acid</td> <td>Tetrachloromethane</td> </tr> </tbody> </table>	Electrolyte	Non- electrolyte	Sodium chloride	Chloroform	Silver nitrate	Glucose	Hydrochloric acid	Tetrachloromethane	3
Electrolyte	Non- electrolyte									
Sodium chloride	Chloroform									
Silver nitrate	Glucose									
Hydrochloric acid	Tetrachloromethane									
2(a)	<p><i>Able to compare the observation correctly</i></p> <p><u>Sample answer:</u> Intensity of blue colour in test tube 3 is higher than in test tube 4.</p>	3								
2(b)	<p><i>Able to give inference correctly</i></p> <p><u>Sample answer:</u> Concentration of iron(II) ions, Fe²⁺ in test tube 3 is higher than in test tube 4. Iron nail in test tube 3 rust more than iron nail in test tube 4.</p>	3								
2(c)	<p><i>Able to give operational definition correctly</i></p> <p><u>Sample answer:</u> When iron nail is in contact with less electropositive metal and is placed in the agar-agar solution, intensity of blue colour is produced.</p>	3								
2(d)	<p><i>Able to state all the relationship between time taken with the amount of rust formed when the iron nail is placed on the moist cotton correctly</i></p> <ol style="list-style-type: none"> 1. Time taken 2. Formation of rust 3. Comparison <p><u>Sample answer:</u> The longer the time taken, the more the rust is formed. // More rust is formed after two days than one day.</p>	3								
3(a)	<p><i>Able to give statement of the problem correctly.</i></p> <p><u>Sample answer:</u> How does temperature affect the rate of reaction?</p>	3								
3(b)	<p><i>Able to state all the three variables correctly</i></p> <p><u>Sample answer :</u> Manipulated variable: Temperature Responding variable: Rate of reaction // Time taken for 'X' mark to disappear from sight. Fixed variable: volume and concentration of (a named acid) / sodium thiosulphate solution</p>	3								
3(c)	<p><i>Able to state the relationship between the manipulated variable and the responding variable with direction.</i></p>	3								

	<p><u>Sample answer:</u> The higher / lower the temperature, the higher / lower the rate of reaction. OR The higher / lower the temperature, the shorter / longer the 'X' mark disappear from sight.</p>											
3(d)	<p><i>Able to give the list of the apparatus and materials correctly and completely.</i></p> <p><u>Sample answer:</u> Materials / substances: [0.1 – 1.0 mol dm⁻³] sodium thiosulphate solution, [0.1– 1.0 mol dm⁻³] hydrochloric acid / nitric acid / sulphuric acid</p> <p>Apparatus: Stopwatch, conical flask, measuring cylinder, white paper with 'X' mark, thermometer, wire gauze, tripod stand, Bunsen burner.</p>	3										
3(e)	<p><i>Able to state all the steps correctly</i></p> <p><u>Sample answer:</u></p> <ol style="list-style-type: none"> 1. Pour 50 cm³ of [0.1 – 1.0 mol dm⁻³] sodium thiosulphate solution into a conical flask. 2. Record the initial temperature of sodium thiosulphate solution using thermometer. 3. Place the conical flask on top of the white paper with 'X' mark. 4. Pour [20 – 100 cm³] acid (named) into the conical flask and start the stopwatch immediately. 5. Swirl the conical flask slowly until the 'X' mark disappear from sight. 6. Stop the stopwatch once the 'X' mark disappear from sight. 7. Record the time taken. 8. Repeat the experiment using sodium thiosulphate solution at 40 °C, 50 °C and 60 °C. 	3										
3(f)	<p><i>Able to construct a table with titles unit correctly</i></p> <p><u>Sample answer:</u></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Temperature (°C)</th> <th style="text-align: center;">Time (s)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">(Room temperature)</td> <td></td> </tr> <tr> <td style="text-align: center;">40</td> <td></td> </tr> <tr> <td style="text-align: center;">50</td> <td></td> </tr> <tr> <td style="text-align: center;">60</td> <td></td> </tr> </tbody> </table>	Temperature (°C)	Time (s)	(Room temperature)		40		50		60		2
Temperature (°C)	Time (s)											
(Room temperature)												
40												
50												
60												