

Peraturan Permarkahan  
CHEMISTRY 4541  
Kertas 1,2 dan 3  
Mei  
2011



BAHAGIAN PENGURUSAN  
SEKOLAH BERASRAMA PENUH DAN SEKOLAH KECEMERLANGAN  
KEMENTERIAN PELAJARAN MALAYSIA

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PERATURAN PERMARKAHAN

PEPERIKSAAN PERTENGAHAN TAHUN 2011  
TINGKATAN LIMA

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**CHEMISTRY  
MID YEAR  
2011  
MARKING SCHEME  
PAPER 1  
PAPER 2  
PAPER 3**

**SKEMA KERTAS 1  
CHEMISTRY 4541/1**

1	A	26	B
2	C	27	C
3	D	28	C
4	D	29	C
5	C	30	B
6	C	31	B
7	A	32	D
8	A	33	B
9	B	34	A
10	D	35	B
11	C	36	C
12	A	37	A
13	B	38	D
14	D	39	D
15	A	40	D
16	C	41	B
17	B	42	A
18	A	43	C
19	B	44	B
20	A	45	A
21	B	46	B
22	B	47	B
23	C	48	A
24	B	49	B
25	B	50	B

## MARKING SCHEME FOR CHEMISTRY PAPER 2

	<u>Mark</u>
1. (a)(i) Haber process	1
(ii) H <sub>2</sub>	1
(iii) Temperature : 450 °C	1
Pressure : 200 atm	1
Catalyst : Iron	1
(iv) Sulphuric acid	1
(b)(i)	
$  \begin{array}{cc}  \text{Cl} & \text{H} \\    &   \\  \text{C} = & \text{C} \\    &   \\  \text{H} & \text{H}  \end{array}  $	1
(ii) PVC does not rust	1
(iii) Produces acidic / toxic gas	<u>1</u>
	<u>9 marks</u>
2 (a) (i) Diffusion	1
(ii) CuSO <sub>4</sub>	1
(iii) Ion	1
(iv) - Copper(II) sulphate is made up of tiny/discrete particles	1
- Particles are in motion // particles move randomly	1
- Particles move through the space in solid agar from high concentration to low concentration	1
(b) (i) 1. Num. of mole = $\frac{120}{24000}$ // 0.005	1
(ii) 1. Num. of oxygen molecules = $\frac{120}{24000} \times 6.0 \times 10^{23}$	1
= $3.0 \times 10^{21}$	<u>1</u>
	<u>9 Marks</u>

SULIT

- 3 (a) (i) R / S 1  
(ii) 2.4 / 2,4 1
- (b) (i) Q 1  
(ii) The atom has 8 valence electron //  
The atom achieve octet electron arrangement //  
The atom has electron arrangement 2.8 1
- (c) T<sup>-</sup> 1
- (d) S and T have 3 shells filled with electrons 1
- (e) (i)  $2R + O_2 \rightarrow 2RO$  1 + 1  
(ii) 1. Num. of mole of R =  $\frac{4.8}{24}$  // 0.2 1  
2. Mass of RO =  $0.2 \times [24 + 16]$  g // 8.0 g  $\frac{1}{10}$  marks
- 4 (a)(i) a chemical formula that shows the simplest ratio of atom  
of element in a compound 1  
(ii) to dry the hydrogen gas / to absorb water vapour 1  
(iii) to avoid the oxidation of lead // to avoid the formation of lead oxide 1
- (b) (i) Lead : (112.18 – 62.50) g // 49.68 g 1  
Oxygen : (116.02 – 112.18) g // 3.84 g 1
- (ii)  $\frac{49.68}{207} : \frac{3.84}{16}$  // 0.24 : 0.24 // 1 : 1 1  
(iii) PbO 1
- (c)  $PbO + H_2 \rightarrow Pb + H_2O$  1
- (d) (i) repeat the process of heating, cooling and weighing until the mass of lead  
is constant 1  
(ii) Magnesium is more reactive than hydrogen //  
Magnesium is placed above hydrogen in reactivity series  $\frac{1}{10}$  marks

SULIT

- 5 (a)(i) Neutralisation 1
- (ii)  $\text{H}_2\text{SO}_4 + 2\text{KOH} \rightarrow \text{K}_2\text{SO}_4 + 2\text{H}_2\text{O}$  1 + 1
- (iii) Pink to colourless 1
- (iv)  $M_a = \frac{1}{2} \times \frac{0.1 \times 25}{12.5}$  1  
 $= 0.1 \text{ mol dm}^{-3}$  1
- (b) 1.  $25 \text{ cm}^3$  1  
 2. Hydrochloric acid is a monoprotic acid // sulphuric acid is a diprotic acid 1  
 3. to produce the same concentration of  $\text{H}^+$  ion // concentration of  $\text{H}^+$  ion in HCl is half. 1
- (c) P : Hydrochloric acid 1  
 Q : Sulphuric acid 1

11 marks

No.	Answer	Sub Mark	Total Mark
6 (a)	$\begin{array}{ccccccc} & \text{H} & & \text{H} & & \text{H} & \\ &   & &   & &   & \\ \text{H} & - \text{C} & - & \text{C} & - & \text{C} & - \text{H} \\ &   & &   & &   & \\ & \text{OH} & & \text{H} & & \text{H} & \end{array} \quad // \quad \begin{array}{ccccccc} & \text{H} & & \text{H} & & \text{H} & \\ &   & &   & &   & \\ \text{H} & - \text{C} & - & \text{C} & - & \text{C} & - \text{H} \\ &   & &   & &   & \\ & \text{H} & & \text{OH} & & \text{H} & \end{array}$	1	
(b)(i)	Propyl ethanoate	1	
(ii)	Sweet pleasant smell	1	
(c) (i)	Oxidation	1	
(ii)	Orange to green	1	
(iii)	Acidified potassium manganate(VII) solution	1	
(d) (i)	1. Functional apparatus 2. Label	1 1	
	<p style="text-align: center;">Porcelain chip</p> <p>Glass wool Soaked in propanol</p> <p style="text-align: center;">Heat</p> <p style="text-align: right;">water</p>		
(ii)	1,2 – dibromopropane	1	
(e)	1. Correct formulae of reactants and products 2. Balance equation	1 1	
	$2 \text{C}_3\text{H}_7\text{OH} + 9 \text{O}_2 \rightarrow 6 \text{CO}_2 + 8 \text{H}_2\text{O}$		
	TOTAL		9

No.	Answer	Sub Mark	Total Mark		
7 (a)					
		Experiment I	Experiment II		
	Observation at anode	Gas bubbles release	Copper electrode become thinner		
	Observation at cathode	Brown solid deposited	Copper electrode become thicker // Brown solid deposited		
	Product at anode	Oxygen gas	Copper(II) ion		
	Half equation at anode	$4 \text{OH}^- \rightarrow 2 \text{H}_2\text{O} + \text{O}_2 + 4\text{e}$	$\text{Cu} \rightarrow \text{Cu}^{2+} + 2\text{e}$	1+1+1+1	10
(b)(i)	1. Positive terminal : Copper Negative terminal : Zinc	1			
	2. Electron flow : Zinc to copper through connecting wire	1	2		
(ii)	1. Correct formulae of reactants and products 2. Balance equation				
	Positive terminal : $\text{Cu}^{2+} \rightarrow \text{Cu} + 2\text{e}$ Negative terminal : $\text{Zn} \rightarrow \text{Zn}^{2+} + 2\text{e}$	1 + 1 1 + 1	4		
(c)(i)	Z, Y, X, W	1	1		
(ii)	1. Potential difference : 0.6 V	1			
	2. Positive terminal : Z	1			
	3. Reason : Z is more electropositive than X // Z is place higher than X in electrochemical series.	1	3		
	TOTAL		20		

	<u>Mark</u>
8 (a)(i) Both axis are labeled and with unit	1
All points are transferred correctly	1
Uniform scale	1
Shape of the graph is correct	1
(ii) $5.0 \text{ cm}^3$	1
(iii) The number of moles of barium ion = $\frac{5.0 \times 1.0}{1000}$ // 0.005 mol	1
The number of moles of sulphate ion = $\frac{5.0 \times 1.0}{1000}$ // 0.005 mol	1
1 mole of sulphate ion	1
(iv) $\text{Ba}^{2+} + \text{SO}_4^{2-} \rightarrow \text{BaSO}_4$	
Formula of reactants correct	1
Formula of product correct	1

- (b)(i) P : Lead (II) carbonate /  $\text{PbCO}_3$  1  
 Q : Lead(II) oxide /  $\text{PbO}$  1  
 R : Carbon dioxide /  $\text{CO}_2$  1
- (ii) Lead(II)nitrate solution 1

Test for  $\text{Pb}^{2+}$ 

Pour the solution into a test tube 1

Add potassium iodide solution 1

Yellow precipitate 1

Test for  $\text{NO}_3^-$ 

Add dilute sulphuric acid

followed by iron(II)sulphate solution 1

Drop/Add slowly concentrated sulphuric acid 1

Brown ring 1

20 marks

- 9(a)(i) R 1  
 Achieve octet electron arrangement // 8 valence electron 1

- (ii)  $2\text{P} + \text{Q}_2 \rightarrow 2\text{PQ}$
- Formula of reactants and product correct 1  
 Balance 1

- (b) Electron arrangement for atom of element X : 2.8.1 1  
 Electron arrangement for atom of element Y : 2.6 1  
 Element X in Group 1 1  
 Because one valence electron 1  
 Period 3 1  
 Three shells occupied with electrons 1

- (c)(i) In molten state , ions can move freely 1  
 In solid state , ions are not freely moving// Ions are in a fixed position 1

- (ii) Sample answer :  
 Lead (II)bromide 1

Apparatus :

Crucible ,battery ,bulb ,connecting wires , tripod stand ,Bunsen burner ,  
 carbon electrodes , pipe-clay triangle. 1

Procedure

1. Fill a crucible with solid lead(II)bromide 1
2. Dip carbon electrodes into lead(II)bromide 1
3. Switch on / complete the circuit 1
- 4.Observe whether the bulb glows\*\* 1
5. Heat the solid lead(II)bromide until it melts completely 1
6. Observe whether the bulb glows\*\*

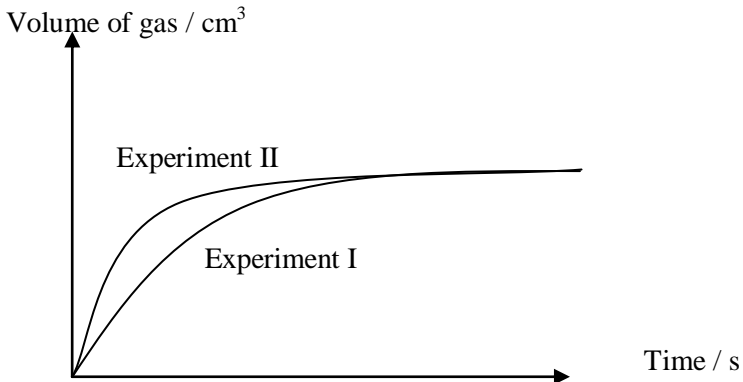
\*\* point 4/6 (1 mark only)

Observation

State of lead(II)bromide	Observation on the bulb
Solid	The bulb did not glow
Molten	The bulb glowed brightly.

1

**20 marks**

No.	Answer	Sub Mark	Total Mark
10(a)(i)	<u>Experiment I</u> $Rate = \frac{25}{45} = 0.56 \text{ cm}^3\text{s}^{-1}$ <u>Experiment II</u> $Rate = \frac{25}{22} = 1.14 \text{ cm}^3\text{s}^{-1}$	1  1	2
(ii)	1. Correct formulae of reactants and products 2. Balance equation $\text{Zn} + 2 \text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2 \quad // \quad \text{Zn} + \text{H}_2\text{SO}_4 \rightarrow \text{ZnSO}_4 + \text{H}_2$	1 1	2
(b)(i)	1. Rate of reaction in experiment II is higher 2. Concentration of $\text{H}^+$ ion in experiment II is higher // sulphuric acid is diprotic acid and hydrochloric acid is monoprotic acid 3. Number of $\text{H}^+$ ion per unit volume in experiment II is higher 4. Frequency of collision between zinc and $\text{H}^+$ ion in experiment II is higher 5. Frequency of effective <b>collision</b> in experiment II is higher	1 1 1 1 1	5
(ii)	1. Label and correct unit of both axes 2. Correct curve and label 	1 1	
	3. Curve in experiment II is steeper // Initial rate of reaction in experiment II is higher 4. Concentration of $\text{H}^+$ ion in experiment II is higher 5. Maximum volume of gas in both experiment are the same 6. Number of mole of $\text{H}^+$ ion in both experiment are the same.	1 1 1 1	6



(c)	<ol style="list-style-type: none"> <li>1. Arrow upward, energy label and two level</li> <li>2. Correct position of reactant and product</li> <li>3. Activation energy without catalyst, <math>E_a</math></li> <li>4. Activation energy with catalyst, <math>E_a'</math></li> </ol> <div style="text-align: center; margin-top: 20px;"> </div>	<p>1 1 1 1</p>	<p>4</p>
(d)	Increase temperature // Use smaller size of zinc	1	1
TOTAL		20	

**MARKING SCHEME**  
**4541/3 CHEMISTRY**  
*Paper 3*

Question	Rubric	Score										
1(a)	Able to write all the time taken accurately with <b>one decimal places with unit.</b>  <u>Answer:</u>  <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><b><u>Temperature</u></b></td> <td style="text-align: center;"><b><u>Time</u></b></td> </tr> <tr> <td style="text-align: center;">35.0</td> <td style="text-align: center;">28.5 s</td> </tr> <tr> <td style="text-align: center;">45.0</td> <td style="text-align: center;">20.0 s</td> </tr> <tr> <td style="text-align: center;">55.0</td> <td style="text-align: center;">15.0 s</td> </tr> <tr> <td style="text-align: center;">65.0</td> <td style="text-align: center;">12.0 s</td> </tr> </table>	<b><u>Temperature</u></b>	<b><u>Time</u></b>	35.0	28.5 s	45.0	20.0 s	55.0	15.0 s	65.0	12.0 s	3
	<b><u>Temperature</u></b>	<b><u>Time</u></b>										
	35.0	28.5 s										
	45.0	20.0 s										
	55.0	15.0 s										
65.0	12.0 s											
Able to write any 3 readings accurately // All readings correctly but without decimal places.	2											
Able to write any 2 readings correctly.	1											
No response given / wrong response	0											

Question	Rubric	Score																		
1(b)	Able to construct a table to record the data that contain:  i. Correct titles ii. Correct readings // ecf from 1(a) iii. Correct unit <u>Sample answer:</u>  <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td style="text-align: left;"><b>Temperature (°C)</b></td> <td>28</td> <td>35</td> <td>45</td> <td>55</td> <td>65</td> </tr> <tr> <td style="text-align: left;"><b>Time ( s )</b></td> <td>43.0</td> <td>28.5</td> <td>20.0</td> <td>15.0</td> <td>12.0</td> </tr> <tr> <td style="text-align: left;"><b>1 / time ( s<sup>-1</sup> )</b></td> <td>0.023</td> <td>0.035</td> <td>0.050</td> <td>0.067</td> <td>0.083</td> </tr> </table>	<b>Temperature (°C)</b>	28	35	45	55	65	<b>Time ( s )</b>	43.0	28.5	20.0	15.0	12.0	<b>1 / time ( s<sup>-1</sup> )</b>	0.023	0.035	0.050	0.067	0.083	3
	<b>Temperature (°C)</b>	28	35	45	55	65														
	<b>Time ( s )</b>	43.0	28.5	20.0	15.0	12.0														
	<b>1 / time ( s<sup>-1</sup> )</b>	0.023	0.035	0.050	0.067	0.083														
	Able to construct a less accurate table that contains: i. Titles ii. Readings iii. Without unit	2																		
Able to construct a table with at least one title / reading	1																			
No response or wrong response	0																			

Question	Rubric	Score
1(c)	Able to draw the graph correctly	3
	i. Axis x : $\frac{1}{\text{time}}$ / s <sup>-1</sup> and axis y : temperature/°C	
	ii. Consistent scale and the graph half of graph paper	
	iii. All the points are transferred correctly	
1(c)	Able to draw the graph incorrectly	2
	i. Axis x : $\frac{1}{\text{time}}$ and axis y : temperature// Inverse axes	
	ii. Consistent scale	
	iii. About 3 points are transferred correctly	
1(c)	Able to state an idea to draw the graph	1
	i. Draw the axis x and axis y	
	ii. Straight line	
	No response or wrong response	0

Question	Rubric	Score
1(d)	Able to state the relationship between the temperature and the rate of reaction correctly	3
	<u>Sample answer:</u> The higher of temperature, the higher of the rate of reaction	
	Able to state the relationship between the temperature and the rate of reaction incorrectly	2
	<u>Sample answer:</u> The higher the temperature, the rate of reaction faster.	
1(d)	Able to state an idea of relationship between the temperature and the rate of reaction	1
	<u>Sample answer:</u> Temperature affects the rate of reaction.	
		No response or wrong response

Question	Rubric	Score	
1(e)	Able to state all the <b>three</b> variables correctly	3	
	<u>Sample answer:</u> Manipulated variable : Temperature of sodium thiosulphate Responding variable : Rate of reaction Constant variable : Volume and concentration of hydrochloric acid//volume and concentration of sodium thiosulphate		
	Able to state any <b>two</b> variables correctly		2
	Able to state any <b>one</b> variables correctly		1
	No response or wrong response	0	

Question	Rubric	Score
1(f)	Able to give the meaning of the rate of reaction correctly.	3
	<u>Sample answer:</u> 1/time for 'X' mark no longer visible // Quantity of sulphur/precipitate formed compared the time	
	Able to give the meaning of the rate of reaction less accurately.	2
	<u>Sample answer:</u> Measure of how quickly a chemical reaction happens//The change/increase/decrease in the amount of products/reactant per time	
	Able to give an idea of the rate of reaction.	1
	<u>Sample answer:</u> Rate of formation of sulphur//time taken to form the sulphur precipitate	
	No response given / wrong response	0

Question	Rubric	Score								
2(a)	Able to state all observations correctly.	3								
	<u>Sample answer:</u>									
	<table border="1"> <thead> <tr> <th>Test tube</th> <th>Observation</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Brown solid formed// blue solution turns light blue</td> </tr> <tr> <td>B</td> <td>No change // remain unchanged</td> </tr> <tr> <td>C</td> <td>Brown solid formed// blue solution turns light blue</td> </tr> </tbody> </table>		Test tube	Observation	A	Brown solid formed// blue solution turns light blue	B	No change // remain unchanged	C	Brown solid formed// blue solution turns light blue
	Test tube		Observation							
	A	Brown solid formed// blue solution turns light blue								
	B	No change // remain unchanged								
C	Brown solid formed// blue solution turns light blue									
	Able to state <b>two</b> observations correctly	2								
	Able to state <b>one</b> observation correctly	1								
	No response or wrong response	0								

Question	Rubric	Score								
2(b)	Able to state the inference correctly based on observation.  <u>Sample answer:</u> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Observation</th> <th style="width: 50%;">Inference</th> </tr> </thead> <tbody> <tr> <td>Brown solid formed</td> <td>Copper formed.</td> </tr> </tbody> </table> Or <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Observation</th> <th style="width: 50%;">Inference</th> </tr> </thead> <tbody> <tr> <td>Blue solution turns light blue</td> <td>Concentration/ number of <math>\text{Cu}^{2+}</math> ion decreases // Concentration of copper(II) sulphate / <math>\text{CuSO}_4</math> decreases</td> </tr> </tbody> </table>	Observation	Inference	Brown solid formed	Copper formed.	Observation	Inference	Blue solution turns light blue	Concentration/ number of $\text{Cu}^{2+}$ ion decreases // Concentration of copper(II) sulphate / $\text{CuSO}_4$ decreases	3
	Observation	Inference								
	Brown solid formed	Copper formed.								
	Observation	Inference								
Blue solution turns light blue	Concentration/ number of $\text{Cu}^{2+}$ ion decreases // Concentration of copper(II) sulphate / $\text{CuSO}_4$ decreases									
Able to state the inference incorrectly  <u>Sample answer:</u> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Observation</th> <th style="width: 50%;">Inference</th> </tr> </thead> <tbody> <tr> <td>Brown solid formed</td> <td>Copper(II) ion/ <math>\text{Cu}^{2+}</math> discharged</td> </tr> </tbody> </table> Or <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Observation</th> <th style="width: 50%;">Inference</th> </tr> </thead> <tbody> <tr> <td>Blue solution turns light blue</td> <td>Amount of copper(II) ion/ <math>\text{Cu}^{2+}</math> decreases // <math>\text{Cu}^{2+}</math> ion / <math>\text{CuSO}_4</math> decreases</td> </tr> </tbody> </table>	Observation	Inference	Brown solid formed	Copper(II) ion/ $\text{Cu}^{2+}$ discharged	Observation	Inference	Blue solution turns light blue	Amount of copper(II) ion/ $\text{Cu}^{2+}$ decreases // $\text{Cu}^{2+}$ ion / $\text{CuSO}_4$ decreases	2	
Observation	Inference									
Brown solid formed	Copper(II) ion/ $\text{Cu}^{2+}$ discharged									
Observation	Inference									
Blue solution turns light blue	Amount of copper(II) ion/ $\text{Cu}^{2+}$ decreases // $\text{Cu}^{2+}$ ion / $\text{CuSO}_4$ decreases									
Able to state an idea of inference  <u>Sample answer:</u> Copper (II) sulphate solution changed.	1									
No response or wrong response	0									

Question	Rubric	Score
2(c)	Able to state arrange all metals correctly  <u>Sample answer:</u> Magnesium/Mg, Metal X, Copper/Cu	3
	Able to state arrange <b>two</b> metals correctly  <u>Sample answer:</u> Magnesium/Mg, Metal X // Metal X, Copper/Cu	2
	Able to state the idea of metal arrangement in ascending order.  <u>Sample answer:</u> Copper/Cu, Metal X, Magnesium/Mg	1
	No response given/ wrong response	0

Question	Rubric	Score
2(d)	Able to predict the observation correctly  <u>Sample answer:</u> No change // Remain unchanged // blue colour does not change	3
	Able to predict the observation incorrectly  <u>Sample answer:</u> No reaction // No displacement	2
	Able to give an idea to predict the observation  <u>Sample answer:</u> Silver does not change.	1
	No response given/ wrong response	0

Question	Rubric	Score				
2(e)	Able to classify all metals correctly  <u>Sample answer :</u> <table border="1" style="margin-left: 40px;"> <thead> <tr> <th>More electropositive</th> <th>Less electropositive</th> </tr> </thead> <tbody> <tr> <td>Aluminium /Al</td> <td>Lead / Pb Iron/ Fe Tin/ Sn</td> </tr> </tbody> </table>	More electropositive	Less electropositive	Aluminium /Al	Lead / Pb Iron/ Fe Tin/ Sn	3
	More electropositive	Less electropositive				
	Aluminium /Al	Lead / Pb Iron/ Fe Tin/ Sn				
	Able to classify <b>three</b> metals correctly	2				
Able to classify any <b>two</b> metals correctly or give opposite answers. <u>Sample answer:</u> <table border="1" style="margin-left: 40px;"> <thead> <tr> <th>More electropositive</th> <th>Less electropositive</th> </tr> </thead> <tbody> <tr> <td>Lead / Pb Iron/ Fe Tin/ Sn</td> <td>Aluminium /Al</td> </tr> </tbody> </table>	More electropositive	Less electropositive	Lead / Pb Iron/ Fe Tin/ Sn	Aluminium /Al	1	
More electropositive	Less electropositive					
Lead / Pb Iron/ Fe Tin/ Sn	Aluminium /Al					
No response or wrong response	0					

Question	Rubric	Score
3(a)	Able to give the problem statement of the experiment correctly  <u>Sample answer</u> : Does an acid/glacial ethanoic acid need water to show its acidic properties? // Is water needed for an acid/ glacial ethanoic acid to show its acidic properties?	3
	Able to give the problem statement of the experiment incorrectly  <u>Sample answer</u> : To investigate/study the role of water in showing the properties of an acid.	2
	Able to state an idea of problem statement of the experiment  <u>Sample answer</u> : Water is needed to show the properties of acid.	1
	No response or wrong response	0

Question	Rubric	Score
3(b)	Able to state <b>All</b> variables correctly  <u>Sample answer</u> : Manipulated variable : Presence of water Responding variable : Acidic properties // Gas produced Constant variable : Acid // glacial ethanoic acid // magnesium r : Volume of acid	3
	Able to state any <b>two</b> variables correctly	2
	Able to state any <b>one</b> variables correctly	1
	No response or wrong response	0

Question	Rubric	Score
3(c)	Able to give the hypothesis correctly  <u>Sample answer</u> : Water is needed for an acid to show its acidic properties // Presence of water is essential for an acid to show its acidic properties.	3
	Able to give the hypothesis almost correct  <u>Sample answer</u> : Ethanoic acid/An acid shows its acidic properties when water is present //The presence of water influence the acidic properties of acid	2
	Able to state an idea of the hypothesis  <u>Sample answer</u> : The water affect the properties of acid	1
	No response or wrong response	0

Question	Rubric	Score
3(d)	Able to give the list of the apparatus and materials correctly and completely  <u>Sample answer</u> : Apparatus : <b>dry</b> test tube Material : Glacial ethanoic acid, water, magnesium ribbon, wooden splinter	3
	Able to give the list of the apparatus and materials correctly but not completely  <u>Sample answer</u> : Dry test tube Glacial ethanoic acid, water, magnesium ribbon	2
	Able to give an idea about the list of the apparatus and substances correctly  <u>Sample answer</u> : Test tube and any <b>one</b> substance	1
	No response or wrong response	0



Question	Rubric	Score	
3(e)	Able to state <b>all</b> procedures correctly	3	
	<u>Sample answer :</u> 1. Glacial ethanoic acid is poured into two different dry test tube labeled A and B. 2. Distilled water is added into glacial ethanoic acid in test tube B. 3. A piece of magnesium ribbon is put into test tube A and B. 4. A lighted wooden splinter is placed at the mouth of both test tubes. 5. The observation is recorded.		
	Able to list down steps <b>1, 2 and 3</b>		2
	Able to list down steps <b>1 and 3 or 2 and 3</b>		1
	No response or wrong response		0

Question	Rubric	Score						
3(f)	Able to exhibit the tabulation of data that includes the following two information correctly 1. Heading for the manipulated variable 2. Heading for the responding variable	2						
	<u>Sample answer :</u> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">(Test tube) // (Condition of acid)</th> <th style="width: 50%;">Observation</th> </tr> </thead> <tbody> <tr> <td>Test tube A //Glacial ethanoic acid</td> <td></td> </tr> <tr> <td>Test tube B //Ethanoic acid solution /in water</td> <td></td> </tr> </tbody> </table>		(Test tube) // (Condition of acid)	Observation	Test tube A //Glacial ethanoic acid		Test tube B //Ethanoic acid solution /in water	
	(Test tube) // (Condition of acid)		Observation					
	Test tube A //Glacial ethanoic acid							
Test tube B //Ethanoic acid solution /in water								
Able to exhibit the tabulation of data less accurately Tabulation of data has the following elements : 1. Heading for the manipulated variable 2. Heading for the responding variable 3. One condition of acid listed	1							
<u>Sample answer :</u> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Acid/test tube</th> <th style="width: 50%;">Effect//Result</th> </tr> </thead> <tbody> <tr> <td>Glacial ethanoic acid</td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table>		Acid/test tube	Effect//Result	Glacial ethanoic acid				
Acid/test tube	Effect//Result							
Glacial ethanoic acid								
No response or wrong response	0							

**END OF MARKING SCHEME**