

PERATURAN PERMARKAHAN PEPERIKSAAN PERCUBAAN SPM TAHUN 2011

CHEMISTRY
Tingkatan 5

SKEMA KERTAS 1

MAKLUMAT UNTUK PEMERIKSA KERTAS

1. Kertas skema ini mengandungi **50** jawapan untuk soalan objektif.
2. Kertas skema ini adalah **sulit** sehinggalah tamat peperiksaan pertengahan tahun 2011.
3. Terima kasih.

Kertas skema ini mengandungi 2 halaman bercetak

Marking scheme Chemistry Paper 1 Form 5

(Trial SPM exam 2011 @ MPSM Pahang)

No. Soalan	Answer	No. Soalan	Answer	No. Soalan	Answer	No. Soalan	Answer
1	B	14	D	27	B	40	B
2	C	15	D	28	D	41	A
3	D	16	C	29	A	42	D
4	B	17	A	30	B	43	C
5	D	18	A	31	D	44	B
6	A	19	A	32	B	45	D
7	C	20	C	33	B	46	C
8	C	21	C	34	A	47	C
9	D	22	D	35	D	48	A
10	D	23	A	36	A	49	C
11	B	24	A	37	D	50	C
12	D	25	C	38	B		
13	C	26	C	39	C		

**MARK SCHEME PAPER 2
TRIAL SPM 2011**

No.	Answer	Mark
1 (a)(i)	Nucleon number is the total number of proton and number of neutron	1
(ii)	X and Y Atoms have same proton number but different nucleon number	1 1
(iii)	4	1
(iv)	8	1
(v)	Group 16 Period 2	1
(b)	(CH ₂ O) _n = 180 // n[12 + 2(1) + 16] = 180 n = 6 C ₆ H ₁₂ O ₆	1 1 1
TOTAL		9

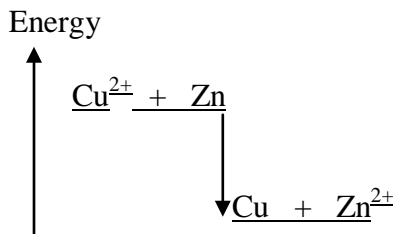
NO	Answer	MARK	
		SUB	TOTAL
2	(a) Answer : Group 16 Period 2	1	
	(b) Answer: Q	1	
	(c) (i) DG ₂ (ii) Low melting and boiling points//Insoluble in water//Soluble in organic solvents//Cannot conduct electricity in any states.//High volatility. either one.	1 1	
	(d) (i) J (ii) 1. Atomic size of J is larger.//Distance between nucleus and valence electron is further. 2. Attractive force between nucleus and valence electron is	1 1	

	weaker.//Atom J is easier to donate electron.	1	
(e)	(i) H	1	
	(ii) H atom has achieved stable/octet electron arrangement.	1	
	TOTAL		9

No.	Answer	Mark				
3 (a)	Copper(II) ion , hydrogen ion // Cu^{2+} , H^+	1				
(b)	<table border="1"> <tr> <td>Experiment I:</td> <td>Cathode: Brown solid deposited</td> </tr> <tr> <td>Experimen II:</td> <td>Cathode: Brown solid deposited</td> </tr> </table>	Experiment I:	Cathode: Brown solid deposited	Experimen II:	Cathode: Brown solid deposited	1
	Experiment I:	Cathode: Brown solid deposited				
Experimen II:	Cathode: Brown solid deposited					
		1				
(c)(i)	Oxygen	1				
(ii)	Insert a glowing splinter into the test tube. The glowing splinter relights.	1				
(d)(i)	Chloride ion // Cl^- ion	1				
	Concentration of Cl^- ion is higher than OH^- ion	1				
(ii)	Correct formulae of reactant and products	1				
	Balance equation	1				
	$2 \text{Cl}^- \rightarrow \text{Cl}_2 + 2\text{e}^-$					
(iii)	Chlorine// Cl_2	1				
TOTAL		10				

NO	Answer	MARK	
		SUB	TOTAL
4	<p>(a) [Able to plot the graph of total volume of gas against time correctly.]</p> <p>Answer :</p> <p>1. axis, label and unit 2. transfer all the points correctly 3. constant scale with smooth curve</p>	1	1+1+1
	<p>(b) [Able to calculate the rate of reaction at 20s.]</p> <p>Answer :</p> <p>Correct tangent at t = 20 s is shown in the graph</p> <p>Calculation:</p> $= \frac{(40 - 15) \text{ cm}^3}{(40 - 6) \text{ s}}$ <p>// 0.735 cm³ s⁻¹ (r: if no/wrong unit)</p>	1	1

	<p>(c) [Able to give the reason why the decomposition of hydrogen peroxide decreases with time.]</p> <p>Answer :</p> <p>Concentration of hydrogen peroxide decreases.</p>	1	
	<p>(d)(i) [Able to suggest a name of catalyst used in the reaction.]</p> <p>Answer : Manganese(IV) oxide//MnO₂ (r: Manganese oxide)</p> <p>(ii) [Able to related the affect of catalyst in the rate of reaction with reference to the collision theory]</p> <p>Answer :</p> <p>1.Catalyst provides an alternative path which requires lower activation energy//Catalyst reduces the activation energy</p> <p>2. More hydrogen peroxide molecules achieve/overcome the energy.</p> <p>3. Frequency of effective collision between molecules increases.</p> <p>4. The rate of decomposition/reaction increases</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>Max : 3</p>	
	TOTAL		10

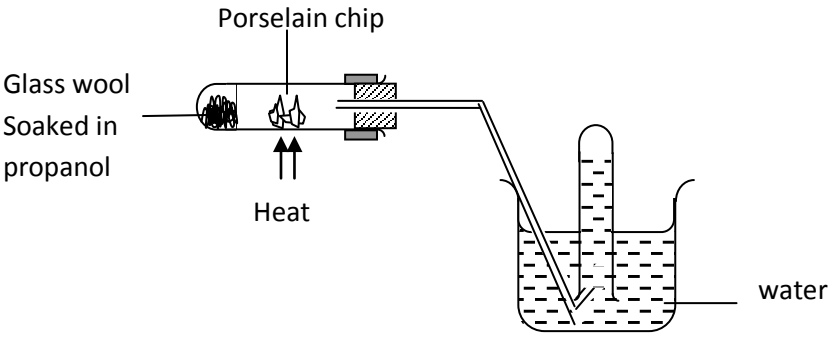
No.	Answer	Mark
5 (a)	Heat change/released when 1 mol of copper is displaced by zinc.	1
(b)	Higher rate of reaction // Reaction is faster	1
(c)	Correct formulae of reactants Correct formulae of products $\text{Cu}^{2+} + \text{Zn} \rightarrow \text{Cu} + \text{Zn}^{2+}$	1 1
(d)(i)	$Q = 50 \times 4.2 \times 5 \text{ J} // 1050 \text{ J} // 1.05 \text{ kJ}$ (r: without unit)	1
(ii)	$n = \frac{0.5 \times 50}{1000} // 0.025$	1
(iii)	$\Delta H = \frac{1050}{0.025} // \frac{1.05}{0.025}$ $= -42\,000 \text{ J mol}^{-1} // -42 \text{ kJ mol}^{-1}$ (r: without unit)	1 1
(e)	Arrow upward with label energy and two levels Correct position of reactans and products 	1 1
(f)	Reduce heat loss to surrounding.	1
TOTAL		11

NO	Answer	MARK	
		SUB	TOTAL
6 (a)	The reaction that involves oxidation and reduction that occur simultaneously.	1	
(b)	To allow the flow of ions in order to complete the electric circuit.	1	
(c)	From P to Q through connecting wire.	1	
(d)	Correct formulae of reactant and product Balance equation $2I^- \rightarrow I_2 + 2e^-$	1 1	
(e)	Brown/Orange/Yellow turns dark blue.	1	
f(i)	$2x + 7(-2) = -2 // 2x - 14 = -2 // 2x = -2 + 14$ $x = +6$ (r: without '+')	1 1	
(ii)	Reduction	1	
(iii)	Cr: $+6 \rightarrow +3$ Oxidation number decreases.	1 1	
(iv)	Acidified potassium manganate(VII) solution//chlorine water//bromine water.	1	
			11

No.	Answer	Sub Mark	Mark
7 (a)(i)	[Label of axes with units] [All points are transferred correctly] [Correct shape of the graph and constant scale]	1 1 1	3
(ii)	2.5 cm ³ (r: without unit) moles of Pb ²⁺ ions = $\frac{1.0 \times 2.5}{1000}$ // 0.0025 moles of I ⁻ ions = $\frac{1.0 \times 5}{1000}$ // 0.005 Pb ²⁺ : I ⁻ 0.0025 : 0.005 1 : 2 Correct formulae of reactants and product Balanced equation Pb ²⁺ + 2I ⁻ → PbI ₂	1 1 1 1 1 1	7
(b)(i)	Salt J : lead(II) nitrate // Pb(NO ₃) ₂ X oxide : lead(II) oxide // PbO Gas Y : nitrogen dioxide // NO ₂ Gas Z : oxygen // O ₂ Yellow precipitate : lead(II) iodide // PbI ₂	1 1 1 1 1	5
(ii)	Nitrate ion Add sulphuric acid Add iron(II) sulphate solution Slowly and carefully add concentrated sulphuric acid Brown ring formed	1 1 1 1 1	5
TOTAL			20

No	Answer	mark		
		Sub mark	total	
8	(a)(i)	1.synthetic polymer does not biodegradable/degrade easily/ not easily degraded by bacteria/microorganism	1	6
		2. synthetic polymer product are disposed into drainage system cause blockage	1	
		3.Release carbon dioxide/sulphur dioxide / toxic gas / acidic gas when burns.	1	
		4.gas released / carbon dioxide gas causes greenhouse effect/increase global temperature.	1	
		5.sulphur dioxide/carbon dioxide / acidic gas causes acid rain	1	
	6.acid rain corrodes buildings/increase acidity of soil/water	1		
	(a)(ii)	1.recycle	1	4
	2.reduce usage	1		
	3.reuse	1		
	4.produce biodegradable synthetic polymer product	1		
	5.burn in special incinerators	1		
	6.sort/separate garbage	1 max 4		
	(b)	1.made of silica, sodium carbonate and calcium carbonate	1	4
		2.good heat insulator	1	
		3.electric insulator	1	
		4.manufacturing special outfit for astronauts/fireman	1	
	(c)(i)	1. main component of glass is silica/silicon dioxide	1	6
		2. ceramic cannot be recycle but glass can	1	
	(c)(ii)	1.Contruction: manufacture of construction products / bricks / cement / tiles / underground piping	1	
		2.electronic field: manufactured of computer/microchips	1	
		3.medical field: manufacture of dentures/porcelain enamels	1	
		4.astronomy field: manufactured of space shuttle	1	
	TOTAL			20

No.	Answer	Sub Mark	Mark
9 (a)	$ \begin{array}{cccc} & \text{H} & \text{H} & \text{H} \\ & & & \\ \text{H} & - \text{C} & - \text{C} & - \text{C} - \text{H} \\ & & & \\ & \text{OH} & \text{H} & \text{H} \end{array} \qquad \begin{array}{cccc} & \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 + 1	2
(b)	<p>Propyl methanoate</p> $ \begin{array}{cccc} & & \text{O} & \\ & & // & \\ \text{H} & - \text{C} & & \\ & \backslash & & \\ & \text{O} & - \text{C} & - \text{C} & - \text{C} & - \text{H} \\ & & & & \\ & & \text{H} & \text{H} & \text{H} \end{array} \quad // $ <p>Propyl ethanoate</p> $ \begin{array}{cccc} & \text{H} & & \text{O} \\ & & & // \\ \text{H} & - \text{C} & - \text{C} & \\ & & \backslash & \\ & \text{H} & \text{O} & - \text{C} & - \text{C} & - \text{C} & - \text{H} \\ & & & & & \\ & & & \text{H} & \text{H} & \text{H} \end{array} \quad // $ <p>Propyl propanoate</p> $ \begin{array}{cccc} & \text{H} & \text{H} & & \text{O} \\ & & & & // \\ \text{H} & - \text{C} & - \text{C} & - \text{C} & \\ & & & \backslash & \\ & \text{H} & \text{H} & \text{O} & - \text{C} & - \text{C} & - \text{C} & - \text{H} \\ & & & & & & \\ & & & & \text{H} & \text{H} & \text{H} \end{array} $	1 + 1	2
(c)(i)	<ol style="list-style-type: none"> 1. Put glass wool into a combustion/boiling tube // Soak glass wool in propanol. 2. Add propanol to the glass wool // Put soaked glass wool into combustion/boiling tube. 3. Put porcelain chips into the boiling tube 4. Heat <u>strongly</u> the porcelain chips 5. heat/warm the propanol 	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	

	<p>6. Functional apparatus 7. Label</p>  <p>8. Chemical equation</p> $\text{C}_3\text{H}_7\text{OH} \rightarrow \text{C}_3\text{H}_6 + \text{H}_2\text{O}$	<p>1 1</p> <p>1</p>	<p>8</p>
(ii)	<p>Propanoic acid Carboxyl group // $-\text{COOH}$</p>	<p>1 1</p>	<p>2</p>
(iii)	<p><u>Test for alkene</u></p> <ol style="list-style-type: none"> 1. <u>Add</u> bromine water into propene and compound R respectively 2. Brown colour of bromine change to colourless in propene 3. No change in compound R. <p>(If bromine water is replaced by acidified potassium manganate(VII) solution, purple turns colourless)</p> <p><u>Test for carboxylic acid</u></p> <ol style="list-style-type: none"> 4. <u>Add</u> zinc / magnesium / aluminium / any metal carbonate powder into propene and compound R respectively. 5. No change in propene. 6. Gas bubbles are released/Effervescence in compound R. 	<p>1 1 1</p> <p>1 1 1</p>	<p>6</p>
TOTAL			20

10	(a)	(i)	<p><i>[able to name solvent X and Y]</i></p> <p>1:Solvent X : tetrachloromethane/methylbenzene/ name any organic solvent</p> <p>2 :Solvent Y : water</p>	1 12
		(ii)	<p><i>[able to describe an experiment to differentiate HCl in solvent X and Y]</i></p> <p>Procedure</p> <ol style="list-style-type: none"> 1. Add 1 spatula of zinc/magnesium/aluminium. (solid metal carbonate can be used to replace metals above) 2. into the beakers containing hydrogen chloride in solvent X and solvent Y 3. No changes in beaker A 4. Gas bubbles formed in beaker B 5. Hydrogen chloride in solvent X/ tetrachloromethane/methylbenzene does not show acidic property/H⁺ is absent. 6. Hydrogen chloride in water shows acidic property/H⁺ is present. 	1 1 1 1 1 16
	(b)	(i)	<p><i>[Able to identify the correct solution and give reason]</i></p> <p>1. hydrogen chloride in solvent Y/ water</p> <p>2.dissociate/ ionize into ions</p>	1 12
		(ii)	<p><i>[Able to describe an experiment to prepare soluble salt from hydrogen chloride solution and a suitable compound]</i></p> <p>Procedure</p> <ol style="list-style-type: none"> 1. Pour (50 – 250) cm³ of hydrochloric acid in a beaker 2. Heat hydrochloric acid. 3. Add zinc oxide/zinc carbonate/zinc 4. until in excess 5. stir the mixture // labeled diagram 6. filter the mixture // labeled diagram 7. the filtrate is heated until saturated / 1/3 of the initial 	1 1 1 1 1 1	

			<p>volume</p> <p>8. the saturated solution is cooled at room temperature</p> <p>9. Filter the crystals formed</p> <p>10. Dry the crystals with filter paper</p> <p>Note:</p> <p>If zinc is used but P2 not mentioned, 2 marks given to P3</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	
			TOTAL	10
					20

PERATURAN PEMARKAHAN KERTAS 3 PERCUBAAN SPM 2011

No. Soalan	Skema pemarkahan	Markah								
1(a)	<p>Able to state all observation correctly</p> <p><u>Sample answer</u></p> <table border="1" data-bbox="201 468 1382 741"> <thead> <tr> <th data-bbox="201 468 683 533">EXPERIMENT</th> <th data-bbox="683 468 1382 533">Observation</th> </tr> </thead> <tbody> <tr> <td data-bbox="201 533 683 604">EXPERIMENT I</td> <td data-bbox="683 533 1382 604">Lead(II) nitrate dissolves // Colourless solution is formed.</td> </tr> <tr> <td data-bbox="201 604 683 674">EXPERIMENT II</td> <td data-bbox="683 604 1382 674">Calcium carbonate does not dissolve/remains unchanged // No change.</td> </tr> <tr> <td data-bbox="201 674 683 741">EXPERIMENT III</td> <td data-bbox="683 674 1382 741">Copper(II) sulphate dissolves// Blue solution is formed.</td> </tr> </tbody> </table> <p>Able to state any 2 observations correctly.</p> <p>Able to state any 1 observation correctly.</p> <p>No response or wrong response</p>	EXPERIMENT	Observation	EXPERIMENT I	Lead(II) nitrate dissolves // Colourless solution is formed.	EXPERIMENT II	Calcium carbonate does not dissolve/remains unchanged // No change.	EXPERIMENT III	Copper(II) sulphate dissolves// Blue solution is formed.	3 2 1 0
EXPERIMENT	Observation									
EXPERIMENT I	Lead(II) nitrate dissolves // Colourless solution is formed.									
EXPERIMENT II	Calcium carbonate does not dissolve/remains unchanged // No change.									
EXPERIMENT III	Copper(II) sulphate dissolves// Blue solution is formed.									
(b)	<p>Able to state the operational definition of soluble salt correctly</p> <p><u>Sample answer:</u></p> <p>When a salt is added into water and dissolves to form a solution, it is a soluble salt.// When a salt dissolves in water to form a solution, it is a soluble salt.</p> <p>Able to state the operational definition of soluble salt less correctly</p> <p><u>Sample answer</u></p> <p>When a salt is added into water and forms a solution, it is a soluble salt. When a salt dissolves to form a solution, it is a soluble salt. Salt dissolves in water to form a solution.</p> <p>Able to state any idea of operational definition of soluble salt</p> <p>Salt dissolves//Salt dissolves in water. Solution forms.</p> <p>No response or wrong response</p>	3 2 1 0								
(c)	<p>Able to explain correctly.</p> <p>Potassium carbonate solution contains free moving carbonate ions as in sodium carbonate solution.</p> <p>Able to explain less correctly</p> <p>Potassium carbonate solution contains carbonate ions//</p>	3 2								

	Calcium ion combines with carbonate ion.							
	Able to give any idea about formation of insoluble salt	1						
	<u>Sample answer</u> Calcium carbonate salt is formed// Double decomposition reaction occurs.							
	No response or wrong response	0						
(d)	Able to classify all the solutions correctly	3						
	<u>Sample answer</u>							
	<table border="1"> <tr> <td>Soluble salt</td> <td>Insoluble salt</td> </tr> <tr> <td>Potassium sulphate</td> <td>Lead(II) sulphate</td> </tr> <tr> <td>Zinc sulphate</td> <td>Barium sulphate</td> </tr> </table>	Soluble salt	Insoluble salt	Potassium sulphate	Lead(II) sulphate	Zinc sulphate	Barium sulphate	
Soluble salt	Insoluble salt							
Potassium sulphate	Lead(II) sulphate							
Zinc sulphate	Barium sulphate							
	# Score 1 – if state in the reverse							
	Able to classify at least 3 salts correctly	2						
	Able to classify any 2 salts correctly	1						
	No response or wrong response	0						

No soalan	Skema pemarkahan	Markah
2(a)	<i>[Able to state the inference correctly]</i> Sample answer: Water absorbed heat energy // Exothermic reaction	3
	<i>[Able to state the inference]</i> Sample answer: Water temperature increase/rises.// Methanol releases heat.//Mercury expands.	2
	<i>[Able to state an idea of inference]</i> Sample answer: Water becomes hot.	1
	<i>[No response given or wrong response]</i>	0
2(b)	<i>[Able to state all variables correctly]</i> Sample answer: Manipulated variable: Types of alcohol Responding variable: Heat of combustion Fixed variable: Volume of water // copper can	3

2(b)	[Able to state any 2 variables correctly]	2
	[Able to state any 1 variable correctly]	1
	[No response given or wrong response]	0
2 (c)	[Able to state the relationship between the manipulated variable and the responding variable with direction correctly] Sample answer: The higher the number of carbon atoms <u>per molecule</u> , the higher the heat of combustion.// When the number of carbon atoms <u>per molecule</u> increases, the heat of combustion increases. Note : RV → MV score 2	3
	[Able to state the relationship between the manipulated variable and the responding variable] Sample answer: The higher the number of carbon atoms, the higher the heat of combustion.	2
	[Able to state an idea of hypothesis] Sample answer: Different alcohols different heat of combustion.// Type of alcohol affects heat of combustion.	1
	[No response given or wrong response]	0
2(d)	[Able to state all the mass of alcohols and round off into two decimal places correctly] Sample answer: Methanol = 1.54 Ethanol = 1.20 Propanol = 1.10 Butanol = 1.61	3
	[Able to state any three the mass of alcohols and round off into two decimal places correctly] [Able to state all the mass of alcohols in four decimal places correctly.]	2
	[Able to state any two the mass of alcohols and round off into two decimal places correctly]	1
	[No response given or wrong response]	0
2(e)	Able to calculate the heat of combustion of methanol by fulfill the following criteria : (i) Heat absorbed by water (ii) Number of mole (iii) Heat of combustion Sample answer: Heat absorbed by water = $200 \times 4.2 \times 30$ J // 25200 J Number of mole = $1.54/32$ // 0.048 Heat of combustion = $-25200/0.048$ J mol ⁻¹ // -525000 J mol ⁻¹ // -525 kJ mol ⁻¹ Note: without unit, score 2	3
	Able to calculate the heat of combustion of methanol by fulfill any two criteria. Sample answer: Heat absorbed by water = $100 \times 4.2 \times 30$ J // 12600 J X	2

	Number of mole = $1.54/32$ // 0.048√ Heat of combustion = $-12600/0.048$ J mol ⁻¹ // -262500 J mol ⁻¹ // -262.5 kJ mol ⁻¹√	
	Able to calculate the heat of combustion of methanol by fulfill any one criteria. Sample answer: Heat absorbed by water = $100 \times 4.2 \times 30$ J // 12600 J X Number of mole = $1.04/32$ // 0.0325X Heat of combustion = $-12600/0.0325$ J mol ⁻¹ // -387692 J mol ⁻¹ // -387.692 kJ mol ⁻¹√	1
	[No response given or wrong response]	0
2(f)	Able to plot graph accurately. Criteria: i. Axis with correct label and unit. ii. Consistent scale iii. Size of graph: at least half of graph paper iv. Transfer all points correctly v. Straight line	3
	Able to plot graph less accurately. Any four criteria	2
	Able to show minimum requirement of plotting graph Criteria: i. Axis with correct label / unit. ii. Transfer all points iii. Straight line	1
	[No response given or wrong response]	0
2(g)	Able to predict the heat of combustion of propanol correctly. Criteria: i. Dotted line is drawn on the graph. ii. Value based on graph. iii. Negative sign with correct unit.	3
	Able to predict the heat of combustion of propanol incompletely. Any two criteria	2
	Able to give value of the heat of combustion of propanol. Criteria (i)/(ii)	1
	[No response given or wrong response]	0

3(a)	<p>Able to give the aim of the experiment correctly</p> <p><u>Sample answers</u></p> <p>To investigate the effect of X and Y metals in contact with iron on the rusting of iron.</p> <p><i>If problem statement is written –skor 1</i></p>	2
	<p>Able to state the aim of the experiment less correctly</p> <p><u>Sample answer</u></p> <p>To investigate the effect of metals X and Y on rusting of iron.</p> <p>To investigate the effect of metals X and Y.</p>	1
	<p>No response or wrong response</p>	0
3(b)	<p>Able to state all the three variables correctly</p> <p>Manipulated variable :</p> <p>1. Metal X and metal Y//two different metals(one metals is less electropositive and one is more electropositive than iron)//pairs of metal X / iron and Y/iron</p> <p>Responding variable :</p> <p>1. Rusting of iron//iron rust//the formation of brown solid//formation of blue spot</p> <p>Constant variables:</p> <p>1. Iron nail//jelly solution//temperature</p>	3
	<p>Able to state any two variables correctly</p>	2
	<p>Able to state any one variable correctly</p>	1
	<p>No response or wrong response</p>	0
3(c)	<p>Able to state the relationship between the manipulated variable and the responding variable with direction correctly.</p> <p><u>Sample answer</u></p> <p>1. When a more electropositive metal is in contact with iron, the metal inhibits rusting. // When a less electropositive metal is in contact with iron, the metal speeds up rusting.</p>	3

	<i>*skor 2 –jika rv mendahului mv terbalik</i>	
	<p>Able to state the relationship between the manipulated variable and the responding variable and direction less correctly (<i>no direction</i>)</p> <p><u>Sample answer</u></p> <p>A more electropositive metal will prevent iron from rusting. // A less electropositive metal will cause iron to rust.</p>	2
	<p>Able to state an idea of hypothesis</p> <p><u>Sample answer:</u></p> <p>Metal Y/metal X affects rusting(of iron)</p>	1
	No response or wrong response	0

No. soalan	Skema pemarkahan	markah
3 (d)	<p>Able to list completely the material/substances and apparatus</p> <p><u>Sample answer:</u></p> <p><u>Materials/substances and apparatus</u> Two Iron nails, Magnesium/zinc/aluminium strip, tin/copper/lead/silver strip Potassium hexacyanoferrate(III) solution + phenolphthalein [Any suitable electrolyte]/[water] Test tube/boiling tube Sand paper</p> <p><i>Rujuk g/rajah yang berlabel jika tiada dalam senarai : 4 dari senarai bertulis dan 4 dari gambarajah berlabel</i></p>	3
	<p>Able to list basic materials and apparatus</p> <p><u>Sample answer:</u></p> <p><u>Materials</u> Metal above iron Metal below iron Iron nail Any suitable electrolyte</p>	2

	<u>Apparatus:</u> any suitable container	
	Able to give an idea of the materials and apparatus <u>Sample answer:</u> Materials iron ,any electrolyte Apparatus: any suitable container	1
	No response or wrong response	0

Question	Mark Scheme	Marks
3 (e)	Able to state all the steps correctly <u>Sample answer:</u> 1. Clean the iron nails and metals strip with sand paper. 2. Coil iron nails with magnesium ribbon and copper strips. 3. Put/place the coiled iron nail into different test tube. 4. Pour/add/fill the hot jelly solution containing potassium hexacyanoferrate(III)solution and phenolphthalein into the test tube. 5. Leave the test tube in a test tube rack for few days. 6. Record the observation. 7. Steps 1 to 6 are repeated using different metal/Y with iron(if steps 2 does not mention two different test tube).	3
	Able to state the steps 2,4,and 6 correctly	2
	Able to state steps 2 and 4 correctly [2 and 4]//the idea combining iron and any metals and any substances	1
	No response or wrong response	0

3 (f)	<p>Able to present/exhibit a table to record the following items/ information correctly</p> <ol style="list-style-type: none"> 1. Heading for the manipulated variables [pair of metals//two different pair of metals] 2. Heading for responding variables 3. 3x2 /2x 3 table <p><u>Sample answer:</u></p> <table border="1" data-bbox="228 583 1076 779"> <thead> <tr> <th>Pair of metals</th> <th>Observation</th> </tr> </thead> <tbody> <tr> <td>Mg/Fe</td> <td></td> </tr> <tr> <td>Cu/Fe</td> <td></td> </tr> </tbody> </table>	Pair of metals	Observation	Mg/Fe		Cu/Fe		3
Pair of metals	Observation							
Mg/Fe								
Cu/Fe								
	<p>Able to present/exhibit a table to record the following items/ information correctly</p> <ol style="list-style-type: none"> 1. Heading for the manipulated variables 2. Heading for responding variables 3. 2x2 table 4. At least one pair of metal <p><u>Sample answer:</u></p> <table border="1" data-bbox="228 1178 976 1310"> <thead> <tr> <th>Set</th> <th>Observation</th> </tr> </thead> <tbody> <tr> <td>Mg/Fe</td> <td></td> </tr> </tbody> </table>	Set	Observation	Mg/Fe		2		
Set	Observation							
Mg/Fe								
	<p>Able to give an idea on tabulation of data,at least one information stated in the table</p> <ol style="list-style-type: none"> 1. At least one heading 2. 2 x 2 table <p><u>Sample answer</u></p> <table border="1" data-bbox="228 1587 1003 1665"> <thead> <tr> <th>Set</th> <th></th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Set				1		
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