4541/3
Kimia
Kertas 3
Peraturan Pemarkahan
2009

PEPERIKSAAN PERCUBAAN
SIJIL PELAJARAN MALAYSIA 2009

KIMIA

KERTAS 3

PERATURAN PEMARKAHAN

UNTUK KEGUNAAN PEMERIKSA SAHAJA

AMARAN

Peraturan pemarkahan ini **SULIT** dan **Hak Cipta Jabatan Pelajaran Pahang**. Kegunaannya khusus untuk pemerikasa berkenaan sahaja

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Peraturan Pemarkahan ini mengandungi 10 halaman bercetak

MARKING SCHEME
TRIAL EXAM 2009

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Question Number	Rubric	Score
1 (a)	[able to state **three** observations for each of the experiment correctly,] **Sample answer:** 1. lithium moves slowly on the water surface. 2. sodium moves faster and randomly on the surface of the water with a hissing sound and ignites with a yellow flame. 3. potassium moves vigorously and randomly on the water surface and ignites with a lilac flame and produced 'pop' and 'hiss' sound	3
	[able to state **two** observations correctly]	2
	[able to state **one** observations correctly]	1
	No response or wrong response	0

Question Number	Rubric	Score
1 (b)	Able to state an inference correctly **Sample answer:** The solution produced is a strong alkali	3
	Able to state an inference less correctly Sample answer: The solution produced is an alkali	2
	Able to give idea for inference Sample answer: The metals dissolve in water	1
	No response or wrong response	0

Question Number	Rubric	Score
1(c)	Able to state the relationship accurately **Sample answer:** The lower the position of the metal in group 1 , the higher the reactivity of the metal towards water. // going down the group 1 the reactivity when react with water increases	3

	Able to state the relationship correctly but less accurate **Sample answer:** Different types of alkali metals, different reactivity of metals// Reactivity of metals depends on different types of alkali metals	2
	Able to state any idea of relationship **Sample answer:** Reactivity of metal depends on the position of metal// Potassium is the most reactive metal when react with water	1
	No response or wrong response	0

Question Number	Rubric	Score
2(a)	Able to write all the pH value accurately **Sample answer:** 1.0 mol dm^{-3} = 0.0 0.1 mol dm^{-3} = 1.0 0.01 mol dm^{-3} = 2.0 0.001 mol dm^{-3} = 3.0 0.0001 mol dm^{-3} = 4.0	3
	Able to write at least 4 reading of pH value accurately	2
	Able to write at least 3 reading of the pH accurately	1
	No response or wrong response	0

Question Number	Rubric	Score
2(b)	Able to construct a table and record the data accurate and correctly contains the following information: 1. Heading in the table: concentration,pH value 2. transfer all pH value taken correctly, value of different concentration correctly 3. concentration with unit **Sample answer :**	3

Concentration of hydrochloric acid /mol dm^{-3}	pH value
1.0	0.0
0.1	1.0

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	0.01 | 2.0 0.001 | 3.0 0.0001 | 4.0	
	Able to construct a table that contains the following information: 1. Heading in the table: concentration,pH value 2. transfer all pH value taken correctly, value of different concentration correctly 3. concentration without unit	2
	Able to construct a table that contain at least one heading and 2 readings of concentration and their pH value correctly.	1
	No response or wrong response	0

Question Number	Rubric	Score
2(c)	Able to state the operational definition for strong acid accurately. **Sample answer:** An acid that has the lower pH value that ionise completely in water to produce high concentration of hydrogen ion.	3
	Able to state the definition for strong acid Sample answer: acid that ionise completely and produce high concentration of hydrogen ion.	2
	Able to state an idea of acid Acid has a sour taste	1
	No response or wrong response	0

Question Number	Rubric	Score
2(d)	Able to state three variables accurately **Sample answer:** Manipulated variable: concentration of acid Responding variable: pH value Controlled variable: type of acid used/hydrochloric solution,//volume of acid	3
	Able to state two variables accurately	2
	Able to state one variable accurately or any two uncomplete variables	1
	No response or wrong response	0

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Question Number	Rubric	Score
2(e)	Able to state the hypothesis correctly **Sample answer:** The higher/lower the concentration of hydrogen ions,H^+ ,the lower/hihger the pH value	3
	Able to state inference less accurate If concentration of acid increase/decrease , the pH value high/low //concentration of hydrogen ion is inversely proportional to the pH value	2
	Able to give idea of hypothesis concentration of hydrogen ion influence pH value	1
	No response or wrong response	0

Question Number	Rubric	Score
2(f)	Able to classify all the ions in acid into anion and cation correctly **Sample answer:** anion: chloride ion(Cl^-), hydroxide ion(OH^-) / cation: hydrogen ion (H^+) or Anion- chloride ion(Cl^-),hydroxide ion(OH^-) Cation- hydrogen ion (H^+)	3
	Able to classify at least one anion and cation correctly **Sample answer:** anion: chloride ion(Cl^-) / hydroxide ion(OH^-) / cation: hydrogen ion (H^+) or Anion- chloride ion(Cl^-) / hydroxide ion(OH^-) Cation- hydrogen ion (H^+)	2
	Able to classify anion and cation correctly but in opposite group: **Sample answer** cation: chloride ion(Cl^-), hydroxide ion(OH^-) / anion: hydrogen ion (H^+)	1

	Or cation- chloride ion(Cl^-) , hydroxide ion(OH^-) anion- hydrogen ion (H^+)	
	No response or wrong response	0

Question Number	Rubric	Score
2(g)	Able to calculate the number of mole correctly by showing a correct step of calculation and the correct answer with unit **Sample answer:** : $\frac{0.01 \times 50}{1000}$:0.0005 mol	3
	Able to show a correct step of calculation and the correct answer without unit **Sample answer:** : $\frac{0.01 \times 50}{1000}$: 0.0005	2
	Able to show either one step of calculation or the answer without unit Sample answer: : $\frac{0.01 \times 50}{1000}$ // : 0.005	1
	No response or wrong response	0

Question Number	Rubric	Score
2 (h)	Able to predict pH value of 0.01 mol dm^{-3} ethanoic acid correctly **Sample answer:** $4 \leq$ pH value ≤ 5	3
	Able to predict pH value of 0.01 mol dm^{-3} ethanoic acid less accurately Sample answer: > 5 and ≤ 6.9	2
	Able to state an idea oh pH value Sample answer: Any value between 1 and 14	1
	No response or wrong response	0

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Question Number	Rubric	Score
3 (a)	Able to give statement of problem correctly **Sample answer:** Does the smaller pieces of marble chips increase the rate of reaction?// How does the total surface of reactants affect the rate of reaction?	3
	Able to give statement of problem less correctly **Sample answer:** Does the size of marble chips increase the rate of reaction?// To study the particle size and the rate of reaction.	2
	Able to give an idea about the statement of problem **Sample answer:** The size of marble chips influences the rate of reaction?	1
	No response or wrong response	0

Question Number	Rubric	Score
3(b)	Able to state all variables correctly **Sample answer:** Manipulated variable: size of marble chips (calcium carbonate/total surface area of marble chips (calcium carbonate) Responding variable: rate of reaction Controlled variable: concentration and volume of hydrochloric acid, mass of marble chips	3
	Able to state any two of the variables above correctly	2
	Able to state any one of the variables above correctly	1
	No response or wrong response	0

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Question Number	Rubric	Score
3(c)	Able to state the relationship correctly between the manipulated variable and the responding variable **Sample answer** When the total surface area marble chips /reactants increases/decrease the rate of reaction increase/decrease// when the size of marble chips increase the rate of reaction decrease	3
	Able to state the relationship between the manipulated variable and the responding variable **Sample answer** The rate of reaction increases when the total surface area increase// the rate of reaction increases when the size of particle decreases// the rate of reaction depends on the total surface area/size of reactant/particles	2
	Able to state the idea of hypothesis **Sample answer** Different size gives different rate of reaction	1
	No response or wrong response	0

Question Number	Rubric	Score
3(d)	Able to give list of substance and apparatus correctly and completely **Sample answer:** Substances: [named]acid [with suitable concentration] Name of calcium carbonate[with suitable mass][2 sizes],water Apparatus: Stopwatch,conical flask,stopper and delivery tube,basin,burette,measuring cylinder,named weighing machine	3
	Able to give list of substances and apparatus correctly but not complete **Sample answer** Substance: [named] acid without mention the concentration	2

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	,calcium carbonate without different size,water Apparatus: Stopwatch,conical flask,measuring cylinder	
	Able to give an idea about the list of substances and apparatus **Sample answer:** Substance : Any acid, marble chips Apparatus: Stopwatch, any suitable container	1
	No response or wrong response	0

Question Number	Rubric	Score
3 (e)	Able to state all procedures correctly **Sample answer:** 1. (1-5) g of granulated calcium carbonate chips is weighed and place them in a conical flask 2. 10-50 cm^3 [any acid] (0.1-2.0)mol dm^{-3} is pour into the conical flask 3. stopper the flask with a stopper that carries a delivery tube into a basin of water. 4. start the stop watch 5.collect the gas using a inverted burette 6.read and record the burette reading after fixed interval of time 7. experiment is stopped when the burette readings remains unchanged 8. Repeat step 1 to 7 by subtituting granulated calcium carbonate with powder.	3
	Able to state all procedures but less accurate **Sample answer:** Contains step 1,2,4,6 and 7	2
	Able to state an idea about how to carry out the experiment **Sample answer :** Contains step 1,2 and 3	1
	No response or wrong response	0

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<table>
<tr><th>Question Number</th><th>Rubric</th><th>Score</th></tr>
<tr><td>3 (f)</td><td>Able to show the suitable and complete tabulation of data with th following aspects
1. 2 split table of 3 rows and 5 column
2. correct titles of time,burette reading and volume of gas collected
3. with unit

sample answer:
Exp 1 : Calcium carbonate chips
<table>
<tr><td>Time/s</td><td>0</td><td>30</td><td>90</td><td>120</td><td>150</td></tr>
<tr><td>Burette reading/cm^3</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Volume of gas/cm^3</td><td></td><td></td><td></td><td></td><td></td></tr>
</table>
Exp 1 : Calcium carbonate powder
<table>
<tr><td>Time/s</td><td>0</td><td>30</td><td>90</td><td>120</td><td>150</td></tr>
<tr><td>Burette reading/cm^3</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Volume of gas/cm^3</td><td></td><td></td><td></td><td></td><td></td></tr>
</table>
</td><td>2</td></tr>
<tr><td></td><td>Able to construct a table with at least
1. one title
2. incomplete list of elements</td><td>1</td></tr>
<tr><td></td><td>No response or wrong response</td><td>0</td></tr>
</table>