BAHAN KECEMERLANGAN (BK3) – PEP. PERCUBAAN SPM 2017
4541/3 KIMIA
KERTAS 3

Question	Rubric	Score
1(a)	Able to record the pH value accurately with **one decimal place**. Answer : Set I : 9.0 Set II : 8.7 Set III : 8.5 Set IV : 8.0	3
	Able to record any **three** pH value accurately with one decimal place // Able to record **all** pH value correctly Sample answer : Set I : 9 // 9.00 Set II : 8.68 Set III : 8.53 Set IV : 8.01	2
	Able to record any **two** pH value correctly	1
	No response or wrong response	0

Question	Rubric	Score
1(b)	Able to construct a table to record the data that contain: 　1. Correct heading 　2. Correct pH value // ecf from 1(a) 　3. Unit Sample answer: | Set // Concentration *Set// Kepekatan* (mol dm^{-3})	pH value *Nilai* pH
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I // 0.1	9.0
II // 0.01	8.7
III // 0.001	8.5
IV // 0.0001	8.0		3
	Able to construct a less accurate table that contains: 　1. Titles 　2. pH value	2
	Able to construct a table with at least one title / pH value	1
	No response or wrong response	0

Question	Rubric	Score
1(c)	Able to calculate the number of moles with correct unit Answer: Number of moles of hydrogen ion = MV/1000 *Bilangan mol ion hidrogen* $$= \frac{0.01 \times 50}{1000}$$ $$= 0.0005 \text{ mol}$$	3
	Able to calculate the number of moles without unit/wrong unit	2
	Able to show an idea of calculation Sample answer: 0.01×50	1
	No response or wrong response	**0**

Question	Rubric	Score
1(d)	Able to state the relationship correctly Sample answers: The higher/lower the concentration of **hydroxide ion,** the higher /lower the pH value // The higher/lower the pH value, the higher/lower the concentration of **hydroxide ion** *Semakin tinggi/rendah kepekatan **ion hidroksida**, semakin tinggi/rendah nilai pH //* *Semakin tinggi/rendah nilai pH, semakin tinggi/rendah kepekatan **ion hidroksida***	3
	Able to state the relationship less accurately. Sample answer: The higher/lower the concentration, the higher/lower the pH value // The higher/lower the pH value, the higher/lower the concentration *Semakin tinggi/rendah kepekatan, semakin tinggi/rendah nilai pH //* *Semakin tinggi/rendah nilai pH, semakin tinggi/rendah kepekatan*	2
	Able to give an idea of relationship Sample answer: Different concentration, different pH value // Concentration affect the pH value *Kepekatan berbeza, nilai pH berbeza//* *Kepekatan mempengaruhi nilai pH*	1

| | No response given / wrong response | 0 |

Question	Rubric	Score
1(e)	Able to predict the pH value correctly Sample answer: [9.0 < pH value ≤14.0] [9.0 < *nilai* pH ≤14.0]	3
	Able to predict the pH value less accurately Sample answer: Higher than 9.0 but less than 14 *Lebih tinggi dari* 9.0 *tetapi kurang dari* 14	2
	Able to state an idea of pH value of alkali Sample answer: [7.0 < pH value ≤ 9.0] //Higher than 9.0 //Lower than 14.0 [7.0 < *nilai* pH ≤9.0] // *Lebih tinggi dari* 9.0// *Kurang dari* 14.0	1
	No response given / wrong response	0

Question	Rubric	Score
2(a)	Able to state **two** observations correctly Sample answer: <table><tr><th>Experiment</th><th>Observation / *Pemerhatian*</th></tr><tr><td>Experiment I</td><td>Copper(II) sulphate dissolves// Blue solution formed. *Kuprum*(II) *sulfat larut //* *Larutan biru terhasil*</td></tr><tr><td>Experiment II</td><td>Zinc carbonate does not dissolve/ remains unchanged // No change. *Zink karbonat tidak larut/* *kekal sama // Tiada perubahan*</td></tr><tr><td>Experiment III</td><td>Lead(II) nitrate dissolves // Colourless solution formed. *Plumbum*(II) *nitrat larut //* *Larutan tidak berwarna terhasil*</td></tr></table>	3
	Able to state any **2** observations correctly.	2
	Able to state any **1** observation correctly.	1
	No response given or wrong response	0

Question	Rubric	Score
2(b)	Able to state an inference correctly Sample answer: <table><tr><td>*Observation/Pemerhatian*</td><td>Inference/*Inferen*</td></tr><tr><td>Copper(II) sulphate dissolves</td><td>**Copper(II) sulphate is a soluble salt** ***Kuprum*(II) *sulfat adalah garam terlarutkan***</td></tr></table> Or /*atau* <table><tr><td>*Observation/Pemerhatian*</td><td>Inference/*Inferen*</td></tr><tr><td>Blue solution is formed</td><td>**Solution formed contains copper(II) ions** ***Larutan mengandungi ion kuprum*(II)**</td></tr></table>	3
	Able to state an inference less correctly Sample answer: The solution contains ion *Larutan mengandungi ion*	2
	Able to state an idea of inference Sample answer: Reaction occurs // Copper(II) sulphate is a salt *Tindak balas berlaku // Kuprum*(II) *sulfat adalah garam.*	1
	No response given or wrong response	0

Question	Rubric	Score
2(c)	Able to state **all** variables correctly Sample answer : Manipulated variable : Copper(II) sulphate, zinc carbonate and lead(II) nitrate // Type of salts Responding variable : Solubility of salt // Formation of solution Constant variable : Water // Temperature of water // Type of solvent *Pemboleh ubah manipulasi : Kuprum*(II) *sulfat, zink karbonat dan plumbum*(II) *nitrat // Jenis garam* *Pemboleh ubah bergerak balas : Keterlarutan garam // Pembentukan larutan*	3

	Pemboleh ubah dimalarkan: Air // Suhu air // Jenis pelarut	
	Able to state any **two** variables correctly	2
	Able to state any **one** variable correctly	1
	No response or wrong response	0

Question	Rubric	Score
2 (d)	Able to give the hypothesis correctly Sample answer : Copper(II) sulphate and lead(II) nitrate soluble in water while zinc carbonate does not soluble in water // Some salts are soluble in water while some salts are insoluble in water *Kuprum*(II) *sulfat dan plumbum*(II) *nitrat larut di dalam air manakala zink karbonat tidak larut di dalam air //* *Sesetengah garam larut di dalam air manakala sesetengah garam tidak larut dalam air*	3
	Able to give the hypothesis almost correct Sample answer : Copper(II) sulphate and lead(II) nitrate soluble in water // Zinc carbonate does not soluble in water Some salts are soluble in water // Some salts are insoluble in water *Kuprum(II) sulfat dan plumbum(II) nitrat larut di dalam air //* *Zink karbonat tidak larut di dalam air //* *Sesetengah garam larut di dalam air // Sesetengah garam tidak larut dalam air*	2
	Able to state an idea of the hypothesis Sample answer : Solubility of salt depends on type of salts // Type of salts affect the solubility of salt *Keterlarutan garam bergantung kepada jenis garam //* *Jenis garam mempengaruhi keterlarutan garam*	1
	No response or wrong response	0

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Question	Rubric	Score
2 (e)	Able to state the correct operational definition *1. what should be done and* *2. what should be observed* <u>Sample answer :</u> When a salt is added/put into water, it dissolves When a salt is added/put into water, a solution formed *Apabila garam dimasukkan ke dalam air, garam larut* *Apabila garam dimasukkan ke dalam air, larutan terhasil*	3
	Able to state the operational definition almost correctly <u>Sample answer:</u> Salt dissolves // Solution formed *Garam larut // Larutan terhasil*	2
	Able to state any idea of soluble salt <u>Sample answer:</u> Reaction occur *Tindak balas*	1
	No response given or wrong response	0

Question	Rubric	Score
2 (f)	Able to classify all the salts correctly <u>Sample answer:</u> <table><tr><th>Soluble salts *Garam terlarutkan*</th><th>Insoluble salts *Garam tak terlarutkan*</th></tr><tr><td>Ammonium carbonate/ $(NH_4)_2CO_3$ Magnesium nitrate/ $Mg(NO_3)_2$ *Ammonium karbonat*/ $(NH_4)_2CO_3$ *Magnesium nitrat*/ $Mg(NO_3)_2$</td><td>Calcium sulphate/ $CaSO_4$ Silver chloride/ AgCl *Kalsium sulfat*/ $CaSO_4$ *Argentum klorida*/ AgCl</td></tr></table>	3
	Able to classify any **three** salts correctly	2

	Able to classify any **two** salts correctly or give **opposite answers**/**wrong heading**	1
	No response given / wrong response	0

Question	Rubric	Score
3(a)	Able to state the problem statement correctly Sample answer: How does the effectiveness of the cleansing action of soap and detergent in hard water different? *Adakah keberkesanan tindakan pencucian sabun dan detergen dalam air liat berbeza ?*	3
	Able to state the problem statement less accurately Sample answer: Does the effectiveness of cleansing action of soap and detergent are different?// To investigate/ compare the effectiveness of soap and detergent in hard water *Adakah keberkesanan tindakan pencucian sabun dan detergen berbeza// Untuk menyiasat/ membanding keberkesanan sabun dan detergen dalam air liat.*	2
	Able to give an idea of the problem statement. Sample answer: Does soap/detergent is more effective? To investigate/ compare the effectiveness of soap and detergent *Adakah sabun/detergen lebih berkesan ?* *Untuk menyiasat/membanding keberkesanan sabun dan detergen*	1
	No response or wrong response	0

Question	Rubric	Score
3(b)	Able to state the three variables correctly Sample answer: **Manipulated variable:** Soap and detergent // Type of cleaning agent *Sabun dan detergen // Jenis agen pencuci* **Responding variable:** Effectiveness of cleansing action // Ability to remove the oily stains on cloth *Keberkesanan tindakan pencucian //* *Keupayaan untuk singkir kotoran berminyak pada pakaian* **Constant variable:** Cloth with oily stains // Hard water// Type of water *Pakaian dengan kotoran berminyak // Air liat // Jenis air*	3
	Able to state **any two** variables correctly	2
	Able to state **any one** variable correctly	1
	No response or wrong response	0

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PP 4541/3

Question	Rubric	Score
3(c)	Able to state the relationship correctly between the manipulated variable and the responding variable with direction Sample answer: Detergent is more effective than soap in cleansing action in hard water. *Tindakan pencucian detergen lebih berkesan berbanding sabun dalam air liat.*	3
	Able to state the relationship less correctly between the manipulated variable and the responding variable with direction Sample answer: Detergent is more effective than soap *Detergen lebih berkesan berbanding sabun*	2
	Able to state the idea of hypothesis Sample answer: Different cleansing agent have different effectiveness// Detergent/Soap is more effective *Agen pencuci berbeza mempunyai keberkesanan berbeza//* *Detergen/ Sabun lebih berkesan*	1
	No response or wrong response	0

BK3- PERCUBAAN SPM 2017
Pemarkahan

Skema

SULIT   **PP 4541/3**

Question	Rubric	Score
	Able to list all of substances and apparatus completely Sample answer: **Substances** Soap, detergent, hard water, 2 pieces of cloths with oily stains **Apparatus** Beaker/Basin, glass rod ***Bahan*** *Sabun, detergen, air liat, 2 cebis kain dengan kotoran berminyak* ***Radas*** *Bikar/besen, rod kaca*	3
3(d)	Able to list materials and apparatus Sample answer: **Substances** Soap, detergent, hard water, pieces of cloths with oily stains **Apparatus** Beaker/Basin, glass rod ***Bahan*** *Sabun/ detergen, air liat, cebisan kain dengan kotoran berminyak* ***Radas*** *Bikar/Besen, rod kaca*	2
	Able to list the minimum substance and apparatus Sample answer: **Substances** Soap / detergent, pieces of cloths	1

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	Apparatus [Any suitable container] ***Bahan*** *Sabun/ detergen, cebisan kain* ***Radas*** [*Sebarang bekas yang sesuai*]	
	No response or wrong response	0

Question	Rubric	Score

3(e)	Able to list **all the steps** correctly
	
	Sample answer:
	
	1. **Measure** and pour [50 - 100] cm^3 of hard water into a beaker.
	    Sukat *dan tuang* [50-100] cm^3 *air liat ke dalam bikar*.
	
	2. **Add** soap into the beaker and stir the mixture.
	    Tambah *sabun ke dalam bikar dan kacau campuran*.
	
	3. **Immerse** a piece of cloth stained with oil in the mixture.
	    Rendam *cebisan kain dengan kotoran berminyak ke dalam campuran*
	
	4. **Stir** the mixture.
	    Kacau *campuran*
	
	5. **Record** the observation.
	    Rekod *pemerhatian*
	
	6. **Repeat** step 1 to 5 by replacing soap with detergent.
	    Ulang *langkah* 1 *hingga* 5 *dengan menggantikan sabun dengan detergen.*
		3

	Able to list down steps **2, 3, 4 and 6**	2
	Able to list down steps **2 and 3**	1
	No response or wrong response	0

Question	Rubric	Score

3(f)	Able to tabulate the data with the following aspects
	
	    1. Correct tittles
	    2. Complete list of elements
	
	<u>Sample answer:</u>
	
	<table><tr><td>**Type of cleaning agent**
	Jenis agen pencuci</td><td>**Observation**
	Pemerhatian</td></tr><tr><td>Soap
	Sabun</td><td></td></tr><tr><td>Detergent
	Detergen</td><td></td></tr></table>
		2

	Able to construct a table with
	
	    1. At least one title
	    2. Incomplete list of elements
	
	<u>Sample answer:</u>
	
	<table><tr><td>**Type of cleaning agent**
	Jenis agen pencuci</td><td></td></tr><tr><td>Soap
	Sabun</td><td></td></tr></table>
		1

	No response or wrong response	0

END OF MARKING SCHEME