

SKEMA PPC KIMIA KERTAS 1 2026

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

A : 10

B : 10

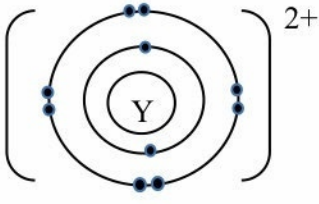
C : 10

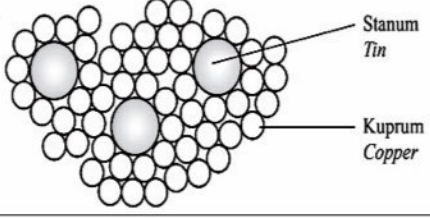
D : 10

PERATURAN PEMARKAHAN
PEPERIKSAAN PERCUBAAN SPM 2026

No			Rubrik	Mark	Total marks
1	(a)		P: Termoplastik / <i>Thermoplastic</i>	1	2
			Q: Termoset / <i>Thermoset</i>	1	
	(b)		Bakelit / melamina // <i>bakelite / melamine</i>	1	1
	(c)		1. Daya tarikan antara rantai polimer adalah lemah. <i>The attraction force between polymer chains are weak.</i>	1	2
			2. Polimer P melebur dan mengeras apabila disejukkan. <i>Polymer P melts and solidify when cooled</i>	1	
			Jumlah	5	

No			Rubrik	Mark	Total marks
2	(a)		Minyak zaitun // Minyak sawit <i>Olive oil // Palm oil</i>	1	1
	(b)	(i)	Penghidrogenan <i>Hydrogenation</i>	1	1
		(ii)	Cecair menjadi pepejal <i>Liquid turns to solid</i>	1	1
		(iii)	Saponifikasi <i>Saponification</i>	1	1
	(c)		Pengantioksida <i>Antioxidant</i>	1	1
			Jumlah	5	

No			Rubric	Marks	Total Marks
3	(a)	(i)	Tertib menaik nombor proton <i>Increasing order of proton number</i>	1	1
		(ii)	Kumpulan 2 kerana atom X mempunyai dua elektron valens <i>Group 2 because atom X has 2 valence electrons</i>	1	1
	(b)	(i)	Atom X: 2.8.2 Atom Y: 2.6	1 1	2
		(ii)	1. <i>bilangan petala dan bilangan elektron betul</i> 2. <i>cas ion yang betul</i> 	1 1	2
			JUMLAH	6	

No			Rubric	Mark	Total marks
4	(a)		Gangsa lebih kuat/ keras daripada kuprum. <i>Bronze is stronger/ harder than copper</i>	1	1
	(b)		1. Lukisan susunan atom 2. Melabel atom 	1 1	2
	(c)		Zink/ Zinc	1	1
	(d)		1. Atom kuprum mengganggu susunan teratur lapisan atom aluminium <i>Copper atoms disrupt the orderly arrangement of the layers of aluminium atoms</i> 2. Lapisan atom sukar untuk menggelongsor di antara satu sama lain apabila daya dikenakan <i>The layers of atoms are difficult to slide over one another when a force is applied.</i> 3. Maka, duralumin adalah lebih keras daripada aluminium. <i>Therefore, duralumin is harder than aluminium.</i>	1 1 1	 3
			Jumlah	6	

No			Rubric	Mark	Total marks												
5	(a)	(i)	Formula yang menunjukkan nisbah paling ringkas atom bagi setiap unsur dalam suatu sebatian. <i>A formula that shows a simplest ratio of atoms of each element in a compound.</i>	1	1												
		(ii)	Magnesium/ Aluminium/ Zink// <i>Magnesium/ Aluminium/ Zinc//</i> Mg/ Al/ Zn	1	1												
		(iii)	Ulang proses pemanasan , penyejukan dan penimbangan sehingga jisim tetap diperolehi <i>Repeat the process of heating , cooling and weighing until a constant mass is obtained.</i>	1	1												
		(iv)	<table border="1"><thead><tr><th></th><th>X</th><th>O</th></tr></thead><tbody><tr><td>Jisim (g)/Mass (g)</td><td>2.4</td><td>1.6</td></tr><tr><td>Bilangan mol <i>Number of mole</i></td><td>$\frac{2.4}{24} = 0.1$</td><td>$\frac{1.6}{16} = 0.1$</td></tr><tr><td>Nisbah teringkas <i>Simplest ratio</i></td><td>1</td><td>1</td></tr></tbody></table> Formula empirik/ <i>Empirical formula: XO</i>		X	O	Jisim (g)/Mass (g)	2.4	1.6	Bilangan mol <i>Number of mole</i>	$\frac{2.4}{24} = 0.1$	$\frac{1.6}{16} = 0.1$	Nisbah teringkas <i>Simplest ratio</i>	1	1	1 1 1	 3
	X	O															
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Nisbah teringkas <i>Simplest ratio</i>	1	1															
	(b)	(i)	Tidak boleh // <i>Cannot</i>	1	1												
		(ii)	Plumbum kurang reaktif terhadap oksigen <i>Lead is less reactive towards oxygen</i>	1	1												
			Jumlah	8													

No			Rubric	Mark	Total marks
6	(a)		Tindak balas eksotermik <i>Exothermic reaction</i>	1	1
	(b)	(i)	Haba dibebaskan, Q/ <i>Heat released, Q</i> = (200)(4.2)(59.0 – 28.0) = 26 040 J // 26.04 kJ	1	1
		(ii)	Mol propanol/ <i>Moles of propanol</i> = (30.69-29.85)/60 = 0.014 mol	1	1
		(iii)	$\Delta H = \frac{Q}{n}$ = $\frac{26.04 \text{ kJ}}{0.014 \text{ mol}}$ = -1860 kJmol ⁻¹	1 1	2
	(c)	(i)	1. Nilai bahan api etanol = $\frac{1380 \text{ kJ mol}^{-1}}{46}$ // 30 kJ g ⁻¹ <i>Fuel value of ethanol</i> 2. Nilai bahan api gas hidrogen = $\frac{286 \text{ kJ mol}^{-1}}{2}$ // 143 kJ g ⁻¹ <i>Fuel value of hydrogen gas</i>	1 1	2
		(ii)	1. Gas hidrogen // <i>hydrogen gas</i> 2. Nilai bahan api yang lebih tinggi// Pembakaran gas hidrogen tidak mencemarkan alam sekitar// <i>Higher fuel value// Combustion of hydrogen gas does not pollute environment.</i> Atau // Or 1. Etanol// <i>Ethanol</i> 2. Pembakaran etanol tidak mencemarkan alam sekitar <i>Combustion of ethanol does not pollute environment.</i>	1 1 1 1	2
			Jumlah	9	

No			Rubric	Mark	Total marks
7	(a)	(i)	Bahan kimia yang mengion dalam air untuk membentuk ion H ⁺ <i>A chemical substance that ionises in water to produce H⁺ ion</i>	1	1
		(ii)	HCl + KOH → KCl + H ₂ O	1	1
		(iii)	1. Bilangan mol/ <i>Number of mol</i> = $\frac{(0.5 \times 25)}{1000}$ = 0.0125 mol 2. Isi padu asid / <i>Volume of acid</i> $\frac{0.5 \times V_a}{0.5 \times 25} = \frac{1}{1}$ 3. $V_a = 25 \text{ cm}^3$	1 1 1	3
		(iv)	Asid sulfurik/ <i>Sulphuric acid</i>	1	1

	(b)	(i)	Tindak balas penguraian ganda dua /tindak balas pemendakan // <i>Double decomposition reaction / precipitation reaction</i>	1	1
		(ii)	NO_3^- r: ion nitrat// <i>nitrate ion</i>	1	1
		(iii)	Pepejal X : Plumbum(II) sulfat r : $\text{Pb}(\text{SO}_4)$ Larutan Y : Natrium klorida r : NaCl	1 1	2
			Jumlah		10

No			Rubric	Mark	Total marks
8	(a)	(i)	Ikatan kovalen// <i>covalent bond</i>	1	1
		(ii)	Tidak boleh// <i>cannot</i>	1	1
		(iii)	1. Sebatian X terdiri daripada molekul neutral/ tiada ion yang bebas bergerak// <i>compound X consists of neutral molecules / no free moving ion in compound</i> 2. tidak boleh membawa cas elektrik <i>cannot carry electrical charge</i>	1 1	2
	(b)	(i)	Etanol// <i>ethanol</i> r: formula	1	1
		(ii)	I : pengoksidaan// <i>oxidation</i> II : pengesteran// <i>esterification</i>	1 1	2
		(iii)	Etil etanoat // <i>ethyl ethanoate</i> // $\text{CH}_3\text{COOC}_2\text{H}_5$	1	1
		(iv)	1. Formula kimia bahan dan hasil tindak balas 2. Persamaan seimbang $\text{C}_2\text{H}_5\text{OH} + 2[\text{O}] \rightarrow \text{CH}_3\text{COOH}$	1 1	2
			Jumlah		



SERTAI TELEGRAM @exercise_students

No			Rubric	Marks	Total Marks
9	(a)	(i)	Satu pengukuran logaritma ke atas kepekatan ion hidrogen yang terkandung dalam suatu larutan akueus. <i>A logarithmic measure of the concentration of hydrogen ions in an aqueous solution.</i>	1	1
		(ii)	pH + pOH = 14 pOH = 14 - 12 = 2 pOH = -log [OH ⁻] [OH ⁻] = 10 ⁻² = 0.01 mol dm ⁻³	1 1	2
		(iii)	1. Kaedah A / Method A 2. Suhu air panas lebih tinggi daripada air sejuk. <i>The temperature of hot water is higher than the temperature of cold water</i> 3. Tenaga kinetik molekul air panas lebih tinggi berbanding air sejuk. <i>Kinetic energy of hot water molecule is higher than cold water.</i>	1 1 1	3
	(b)		1. Sampel air sungai C mengandungi asid kuat. <i>The river water sample C contains strong acid.</i> 2. Asid kuat mengion lengkap dalam air menghasilkan kepekatan ion H ⁺ yang tinggi. <i>Strong acid ionise completely in water to produce high concentration of H⁺ ions</i> 3. Sampel air sungai D mengandungi asid lemah. <i>The river water sample D contains weak acid.</i> 4. Asid lemah mengion separa lengkap dalam air menghasilkan kepekatan ion H ⁺ yang rendah. <i>Weak acid ionise partially in water to produce low concentration of H⁺ ions</i> 5. Semakin tinggi kepekatan ion H ⁺ , semakin rendah nilai pH <i>The higher the concentration of H⁺ ions, the lower the pH value.</i>	1 1 1 1	5
	(c)	(i)	II, I, III	1	1
		(ii)	1. faktor saiz <i>Factor size</i> 2. Formula kimia yang betul <i>Correct chemical formula</i> 3. persamaan kimia yang seimbang <i>Balanced chemical equation</i> Jawapan/ Answer: <chem>CaCO3 + H2SO4 -> CaSO4 + CO2 + H2O</chem>	1 1 1	3

		(iii)	1. Asid hidroklorik ialah asid monoprotik manakala asid sulfurik ialah asid diprotik. <i>Hydrochloric acid is monoprotic acid while sulphuric acid is diprotic acid.</i> 2. Kepekatan ion H^+ dalam asid sulfurik dalam eksperimen III adalah dua kali ganda daripada asid hidroklorik dalam eksperimen I. <i>Concentration of H^+ ions in sulphuric acid in experiment III is doubled than hydrochloric acid in experiment II.</i> 3. Bilangan ion H^+ per unit isipadu eksperimen III lebih tinggi daripada eksperimen II <i>Number of H^+ ions per unit volume in experiments III is higher than experiment II.</i> 4. Frekuensi perlanggaran antara ion H^+ dengan $CaCO_3$ dalam eksperimen III lebih tinggi. <i>Frequency of collision between H^+ ions and $CaCO_3$ in experiment III is higher.</i> 5. Frekuensi perlanggaran berkesan eksperimen III lebih tinggi. <i>Frequency of effective collision experiment III is higher.</i>	1 1 1 1 1	5
			JUMLAH		20

No	Rubric			Mark	Total marks
10	(a)	(i)	1. Pengoksidaan ialah tindak balas kimia di mana bahan mengalami peningkatan nombor pengoksidaan <i>Oxidation is a chemical reaction which is substances undergoes increase in oxidation number.</i> 2. Penurunan ialah tindak balas kimia di mana bahan mengalami penurunan nombor pengoksidaan <i>Reduction is a chemical reaction which is substances undergoes decrease in oxidation number.</i>	1 1	2
		(ii)	1. $Ag^+ // AgNO_3 //$ ion argentum // <i>silver ion</i> 2. Nilai $E^0 Ag^+$ lebih positif daripada Nilai $E^0 Cu^{2+}$ <i>E^0 value of Ag^+ is more positive than E^0 value of Cu^{2+}</i> 3. Ag^+ mempunyai kecenderungan yang lebih tinggi untuk menerima elektron untuk membentuk atom $Ag//$ Ag^+ mengalami penurunan <i>Ag^+ has greater tendency to receive electrons to form silver atom // Ag^+ undergoes reduction</i>	1 1 1	3

(b)	1. Mg // Magnesium	1	5
	2. Nilai E^0 Mg lebih negatif daripada Nilai E^0 Cu <i>E^0 value of Mg is more negative than E^0 value of Cu</i>	1	
	3. $E^0_{\text{sel}} = (0.34) - (-2.38) \text{ V} // +2.72 \text{ V}$	1	
	Mg (p) Mg^{2+} (ak) Cu^{2+} (ak) Cu (p) Mg (s) Mg^{2+} (aq) Cu^{2+} (aq) Cu (s)		
	4. Kedudukan anod dan katod yang betul	1	
	5. Sempadan fasa dan titian garam ditunjukkan	1	
(c)	1. Logam P : Zn/Mg/Al (mana-mana logam yang lebih elektropositif daripada Fe) <i>Metal P : Zn/Mg/Al (any suitable metal that more electropositive than Fe)</i>	1	10
	2. Logam Q : Cu/Ag (mana-mana logam yang kurang elektropositif daripada Fe) <i>Metal Q : Cu/Ag (any suitable metal that less electropositive than Fe)</i>	1	
	3. Logam P lebih elektropositif daripada Fe <i>Metal P more electropositive than Fe</i>	1	
	4. Logam Q kurang elektropositif daripada Fe <i>Metal Q more electropositive than Fe</i>	1	
	5. Tiada ion Fe^{2+} // ion Zn^{2+} / Mg^{2+} / Al^{3+} hadir // Pengaratan tidak berlaku <i>No Fe^{2+} // Zn^{2+} / Mg^{2+} / Al^{3+} present // Rusting does not occur</i>	1	
	6. Logam P dioksidakan <i>Metal P is oxidized</i>	1	
	7. $\text{Zn} \rightarrow \text{Zn}^{2+} + 2\text{e}^-$ / $\text{Mg} \rightarrow \text{Mg}^{2+} + 2\text{e}^-$ / $\text{Al} \rightarrow \text{Al}^{3+} + 3\text{e}^-$	1	
	8. Ion Fe^{2+} hadir // Pengaratan berlaku <i>Fe^{2+} present // Rusting occurs</i>	1	
	9. Paku besi dioksidakan <i>Iron is oxidized</i>	1	
	10. $\text{Fe} \rightarrow \text{Fe}^{2+} + 2\text{e}^-$	1	
	JUMLAH	20	

No			Rubric	Mark	Total marks																
11	(a)		Formula kimia yang menunjukkan bilangan sebenar atom setiap jenis unsur yang terdapat di dalam satu molekul sesuatu sebatian. <i>A chemical formula that shows the actual number of atoms of each type of element present in one molecule of a compound</i>	1	1																
	(b)	(i)	<table><tr><td>Unsur <i>Element</i></td><td>C</td><td>H</td><td>O</td></tr><tr><td>Jisim (g) <i>Mass</i></td><td>40</td><td>6.67</td><td>53.33</td></tr><tr><td>Bil mol <i>Number of mole</i></td><td>$\frac{40}{12}=3.33$</td><td>$\frac{6.67}{1}=6.67$</td><td>$\frac{53.33}{16}=3.33$</td></tr><tr><td>Nisbah mol <i>Mole ratio</i></td><td>$\frac{3.33}{3.33}=1$</td><td>$\frac{6.67}{3.33}=2$</td><td>$\frac{3.33}{3.33}=1$</td></tr></table> Formula empirik/ <i>Empirical formula</i> = CH₂O. [12+2(1)+16]n =180 $n=\frac{180}{30}=6$ Formula molekul/ <i>Molecular formula</i> = (CH₂O)₆ = C₆H₁₂O₆	Unsur <i>Element</i>	C	H	O	Jisim (g) <i>Mass</i>	40	6.67	53.33	Bil mol <i>Number of mole</i>	$\frac{40}{12}=3.33$	$\frac{6.67}{1}=6.67$	$\frac{53.33}{16}=3.33$	Nisbah mol <i>Mole ratio</i>	$\frac{3.33}{3.33}=1$	$\frac{6.67}{3.33}=2$	$\frac{3.33}{3.33}=1$	1 1 1 1 1	5
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		(ii)	Perbezaan: Kedua-dua formula menunjukkan bilangan atom setiap unsur yang berbeza// kedua-dua mempunyai bilangan atom C, bilangan atom O dan bilangan atom H yang berbeza <i>Both formulas show different numbers of atoms of each element // Both have different numbers of carbon atoms, oxygen atoms, and hydrogen atoms</i> Formula empirik menunjukkan nisbah paling ringkas bilangan atom C kepada atom H dan atom O dalam satu molekul glukosa ialah 1:2:1 Manakala formula molekul menunjukkan satu molekul glukosa terdiri daripada 6 atom C, 12 atom H dan 6 atom O. <i>The empirical formula shows that the simplest ratio of the number of C atoms to H atoms and O atoms in one molecule of glucose is 1:2:1. Meanwhile, the molecular formula shows that one molecule of glucose consists of 6 C atoms, 12 H atoms, and 6 O atoms</i>	1 1	2																
	(c)		1. Logam X: Magnesium // aluminium // zink Metal X : <i>Magnesium // aluminium // zinc</i> 2. Logam X lebih reaktif daripada hidrogen // Logam X reaktif terhadap oksigen. <i>Metal X is more reactive than hydrogen// Metal X is reactive towards oxygen</i> 3. Logam Y: kuprum // plumbum // stanum <i>Metal Y: copper // lead // tin</i>	1 1 1																	



		4. Logam Y kurang reaktif daripada hidrogen // Logam Y kurang reaktif terhadap oksigen <i>Metal Y is less reactive than hydrogen// Metal Y is less reactive towards oxygen</i>	1	4
(d)		1. Kuprum(II) karbonat// <i>Copper(II) carbonate</i> 2. Formula bahan dan hasil tindak balas yang betul <i>Correct formulae of the reactants and products</i> 3. Persamaan kimia yang seimbang <i>Balanced chemical equation</i> $\text{CuCO}_3 \rightarrow \text{CuO} + \text{CO}_2$ Prosedur/ <i>Procedure:</i> 4. Isi satu spatula garam Q karbonat ke dalam tabung didih. <i>Put one spatula of carbonate salt Q into a boiling tube</i> 5. Panaskan garam Q karbonat dan alirkan gas yang terhasil ke dalam air kapur <i>Heat carbonate salt Q and pass the gas produced into limewater</i> 6. Rekodkan pemerhatian <i>Record the observations</i> 7. Gambar rajah berlabel <i>Labelled diagram</i> 8. Gambar rajah berfungsi <i>Functional diagram</i>	1 1 1 1 1 1 1	
		Jumlah markah	20	20

