

**SKEMA PEMARKAHAN KERTAS 2 SET 2 JUJ KIMIA 2024**

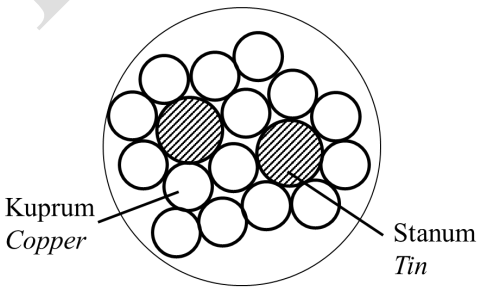
| No. Soalan    |        | Skema Pemarkahan                                                                                                                                        | Markah      | ΣMarkah |
|---------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------|
| 1             | (a)    | <b>[Dapat menyatakan keadaan fizikal dengan betul]</b><br><br>1. X : Pepejal / <i>Solid</i><br>2. Y : Cecair / <i>Liquid</i><br>3. Z : Gas / <i>Gas</i> | 1<br>1<br>1 | 3       |
|               | (b)(i) | <b>[Dapat menyatakan perubahan bagi tenaga zarah dengan betul]</b><br><br>Bertambah // <i>Increase</i>                                                  | 1           | 1       |
|               | (ii)   | <b>[Dapat menyatakan perubahan bagi daya tarikan antara zarah dengan betul]</b><br><br>Semakin lemah // <i>Weaker</i>                                   | 1           | 1       |
| <b>JUMLAH</b> |        |                                                                                                                                                         | <b>5</b>    |         |

| No. Soalan    |     | Skema Pemarkahan                                                                                                                                                                                                                                                                                                                                                                           | Markah   | ΣMarkah |
|---------------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------|
| 2             | (a) | <b>[Dapat menyatakan maksud hidrokarbon dengan betul]</b><br><br>Sebatian yang mengandungi hidrogen dan karbon sahaja<br>// <i>Compound containing only hydrogen and carbon.</i>                                                                                                                                                                                                           | 1        | 1       |
|               | (b) | <b>[Dapat menyatakan formula am dan kumpulan berfungsi siri homolog sebatian dengan betul]</b><br><br>1. Formula am : $C_nH_{2n}$ //<br><i>General formula : <math>C_nH_{2n}</math></i><br>2. Kumpulan berfungsi : Ikatan ganda dua antara atom karbon //<br><i>Functional group : Double bond between carbon atoms</i>                                                                    | 1<br>1   | 2       |
|               | (c) | <b>[Dapat menyatakan sumber utama hidrokarbon dan kegunaan utama pecahan hidrokarbon dengan betul]</b><br><br>1. Petroleum // minyak mentah // <i>petroleum // crude oil</i><br>2. Sebagai bahan api //sebagai bahan mentah dalam industri petrokimia // terima jawapan lain yang sesuai<br><i>as fuel // as raw materials for the petrochemical industry// accept any suitable answer</i> | 1<br>1   | 2       |
| <b>JUMLAH</b> |     |                                                                                                                                                                                                                                                                                                                                                                                            | <b>5</b> |         |

| No. Soalan    |        | Skema Pemarkahan                                                                                                                                                                                                                                                                                                                                                                                                          | Markah   | ΣMarkah |
|---------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------|
| 3             | (a)(i) | <b>[Dapat menyatakan maksud polimer dengan betul]</b><br><br>Molekul berantai panjang yang terhasil daripada percantuman banyak ulangan unit asas / monomer // <i>Long chain molecule that is made from a combination of many repeating basic units/ monomer</i>                                                                                                                                                          | 1        | 1       |
|               | (ii)   | <b>[ Dapat menyatakan monomer bagi polimer Y]</b><br><br>Etena // <i>Ethene</i> // $C_2H_4$ // $\begin{array}{c} H & H \\   &   \\ H - C & = & C - H \end{array}$                                                                                                                                                                                                                                                         | 1        | 1       |
|               | (iii)  | <b>[ Dapat menulis persamaan tindak balas pempolimeran bagi polimer Y dengan betul]</b><br>1. Formula bahan tindak balas dan hasil tindak balas<br>2. Persamaan seimbang<br><br>$n \begin{array}{c} H & H \\   &   \\ C & = & C \\   &   \\ H & H \end{array} \longrightarrow \left[ \begin{array}{c} H & H \\   &   \\ -C & - & C- \\   &   \\ H & H \end{array} \right]_n$<br>//<br>$n C_2H_4 \rightarrow -(C_2H_4)-_n$ | 1<br>1   | 2       |
|               | (b)    | <b>[Dapat mencadangkan satu cara untuk menambah baik penghasilan sarung tangan dan menamakan proses terlibat dengan betul]</b><br><br>1. Menambahkan / mencampurkan sulfur ke dalam lateks // <i>Add / mix sulphur into latex</i><br>2. Proses pemvulkanan // <i>Vulcanization process</i>                                                                                                                                | 1<br>1   | 2       |
| <b>JUMLAH</b> |        |                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>6</b> |         |

| No. Soalan   |     | Skema Pemarkahan                                                                                                                                                                                                                                                                                                                                                    | Markah   | ΣMarkah |
|--------------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------|
| 4            | (a) | <b>[Dapat menyatakan maksud kosmetik dengan betul]</b><br><br>Bahan atau produk yang digunakan secara luaran untuk membersihkan, melindungi atau mencantikkan penampilan seseorang // <i>Materials or products that are used externally to cleanse, protect or enhance one's appearances.</i>                                                                       | 1        | 1       |
|              | (b) | <b>[Dapat menyatakan jenis kosmetik A dan kosmetik B dengan betul]</b><br><br>1. Kosmetik A : Kosmetik rias // <i>Cosmetic A : Makeup cosmetics</i><br>2. Kosmetik B : Kosmetik perawatan // <i>Cosmetic B : Treatment cosmetics</i>                                                                                                                                | 1<br>1   | 2       |
|              | (c) | <b>[Dapat mencadangkan dua contoh bahan kosmetik dengan betul]</b><br><br>1. Deodoran // <i>Deodorants</i><br>2. Minyak wangi // <i>Perfumes</i>                                                                                                                                                                                                                    | 1<br>1   | 2       |
|              | (d) | <b>[Dapat mencadangkan dan menerangkan satu sumber tenaga alternatif yang sesuai untuk mengurangkan penggunaan tenaga di rumah]</b><br><br>1. Tenaga solar // <i>Solar energy /</i><br>2. Sel solar lebih efisien // Tenaga yang boleh diperbaharui // Sumber tenaga semula jadi // <i>Solar cells more efficient // Renewable energy // Natural energy sources</i> | 1<br>1   | 2       |
| <b>TOTAL</b> |     |                                                                                                                                                                                                                                                                                                                                                                     | <b>7</b> |         |

| No. Soalan    |        | Skema Pemarkahan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Markah | ΣMarkah  |
|---------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------|
| 5             | (a)    | <b>[Dapat menyatakan maksud tindak balas redoks dengan betul]</b><br><br>Tindak balas kimia yang melibatkan pengoksidaan dan penurunan berlaku secara serentak/pada masa yang sama// <i>Chemical reaction where oxidation and reduction occur simultaneously/at the same time.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1      | 1        |
|               | (b)(i) | <b>[Dapat mencadangkan larutan X]</b><br><br>Larutan ferum(II) sulfat // <i>Iron(II) sulphate solution</i> // $\text{FeSO}_4$ // $\text{Fe}(\text{NO}_3)_2$ // Ferum(II) nitrat// Ferum(II) nitrate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1      | 1        |
|               | (ii)   | <b>[Dapat menulis setengah persamaan bagi pengoksidaan dan penurunan bagi Set 1 dengan betul]</b><br><br>Pengoksidaan / <i>Oxidation</i> : $\text{Fe}^{2+} \rightarrow \text{Fe}^{3+} + \text{e}^-$<br>Penurunan / <i>Reduction</i> : $\text{Br}_2 + 2\text{e}^- \rightarrow 2\text{Br}^-$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1<br>1 | 2        |
|               | (c)    | <b>[Dapat menerangkan secara ringkas ujian pengesahan hasil tindak balas di Set II dengan betul]</b><br><br>1. Tambahkan larutan ammonia/ NaOH sedikit-sedikit sehingga berlebihan ke dalam tabung uji // <i>Add ammonia/ NaOH solution into a test tube.</i><br>2. Mendakan hijau terbentuk menunjukkan kehadiran ion $\text{Fe}^{2+}$ // <i>Green precipitate is formed which shows the presence of <math>\text{Fe}^{2+}</math> ion.</i><br>//<br>1. Tambahkan beberapa titis larutan kalium heksasianoferrat(III) ke dalam tabung uji // <i>Add a few drops of potassium hexacyanoferrate(III) solution into a test tube.</i><br>2. Mendakan biru tua terbentuk menunjukkan kehadiran ion $\text{Fe}^{2+}$ // <i>Dark blue precipitate is formed which shows the presence of <math>\text{Fe}^{2+}</math> ion.</i> | 1<br>1 | 2        |
|               | (d)    | <b>[Dapat menulis persamaan ion bagi tindak balas yang berlaku dengan betul]</b><br><br>1. Formula bahan tindak balas dan hasil tindak balas<br>2. Persamaan seimbang<br><br>$2\text{I}^- + \text{Br}_2 \rightarrow \text{I}_2 + 2\text{Br}^-$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1<br>1 | 2        |
| <b>JUMLAH</b> |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |        | <b>8</b> |

| Question No. |        | Mark Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Sub Mark    | ΣMark |
|--------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------|
| 6            | (a)(i) | <b>[Dapat menyatakan nama komponen asas pembuatan kaca dengan betul]</b><br><br>Silika// Silica// Silikon dioksida // <i>Silicon dioxide</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1           | 1     |
|              | (ii)   | <b>[ Dapat mengenal pasti jenis kaca X dengan betul]</b><br><br>Kaca silika terlakur// <i>Fused glass</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1           | 1     |
|              | (b)(i) | <b>[ Dapat menerangkan perbezaan pemerhatian dari segi kekerasan bagi bongkah kuprum dan bongkah gangsa dengan betul]</b><br><br>1. Bongkah gangsa lebih keras berbanding bongkah kuprum // <i>Bronze block is harder than copper block</i><br>2. Kehadiran atom asing yang berlainan saiz mengganggu susunan atom kuprum yang teratur // <i>The presence of foreign atom which different in size disrupt the orderly arrangement of copper atom</i><br>3. Apabila daya dikenakan ke atas bongkah, lapisan atom sukar menggelongsor di atas satu sama lain // <i>When forces is applied on the block, the atom layer difficult to slide on top of each other</i> | 1<br>1<br>1 | 3     |
|              | (ii)   | <b>[Dapat melukis susunan atom dalam bongkah gangsa dengan betul]</b><br><br>1. Susunan atom dalam gangsa yang betul// <i>Correct arrangement of atoms in bronze</i><br>2. Label<br><br>                                                                                                                                                                                                                                                                                                                                                                                      | 1<br>1      | 2     |

| Question No.  |       | Mark Scheme                                                                                                                                                                                                                                                                                                           | Sub Mark           | ΣMark |
|---------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------|
|               | (iii) | <b>[Dapat mengira jisim stanum dalam bongkah gangsa dengan betul]</b><br><br>1. Langkah pengiraan yang betul // <i>Correct calculation</i><br><br>2. Jawapan dengan unit yang betul // <i>Correct answer with correct unit</i><br><br>Jawapan/ <i>answer</i> :<br><br>1. $\frac{15}{100} \times 250$<br><br>2. 37.5 g | <br><br>1<br><br>1 | 2     |
| <b>JUMLAH</b> |       |                                                                                                                                                                                                                                                                                                                       | <b>9</b>           |       |

| Question No. |     | Mark Scheme                                                                                                                                                                                                                     | Sub Mark   | ΣMark |
|--------------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------|
| 7            | (a) | <b>[Dapat menyatakan fungsi kayu uji berbara dengan betul]</b><br><br>Untuk mengesahkan kehadiran gas oksigen // <i>To verify the presence of oxygen gas</i>                                                                    | 1          | 1     |
|              | (b) | <b>[Dapat menyatakan nama gas perang yang terbebas dengan betul]</b><br><br>Nitrogen dioksida // <i>Nitrogen dioxide</i>                                                                                                        | 1          | 1     |
|              | (c) | <b>[Dapat menulis persamaan kimia dengan betul]</b><br><br>1. Formula bahan tindak balas dan hasil tindak balas<br>2. Persamaan seimbang<br><br>$2\text{Pb}(\text{NO}_3)_2 \rightarrow 2\text{PbO} + 4\text{NO}_2 + \text{O}_2$ | <br>1<br>1 | 2     |
|              | (d) | <b>[Dapat menghitung bilangan mol garam dengan betul]</b><br><br>$\text{Bil. mol Pb}(\text{NO}_3)_2 = \frac{33.1}{331} // 0.1$                                                                                                  | 1          | 1     |

| Question No.  |     | Mark Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                     | Sub Mark        | ΣMark |
|---------------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------|
|               | (e) | <b>[Dapat mengenal pasti kation yang hadir dan dapat menghurai ujian kimia dengan betul]</b><br><br>1. $\text{Pb}^{2+}$ / ion plumbum(II) // <i>lead(II) ions</i><br>2. Tambahkan larutan kalium iodida ke dalam tabung uji yang mengandungi larutan plumbum(II) nitrat.<br><i>Add potassium iodide solution into the test tube containing lead(II) nitrate solution.</i><br>3. Mendakan kuning terbentuk // <i>Yellow precipitate produced</i> | 1<br>1<br><br>1 | 3     |
|               | (f) | <b>[Dapat memilih bahan yang paling sesuai dan mewajarkannya dengan betul]</b><br><br>1. Asid etanoik / <i>Ethanoic acid</i><br>2. Asid etanoik adalah asid lemah // Kurang menghakis<br><i>Ethanoic acid is a weak acid // Less corrosive</i>                                                                                                                                                                                                  | 1<br><br>1      | 2     |
| <b>JUMLAH</b> |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>10</b>       |       |

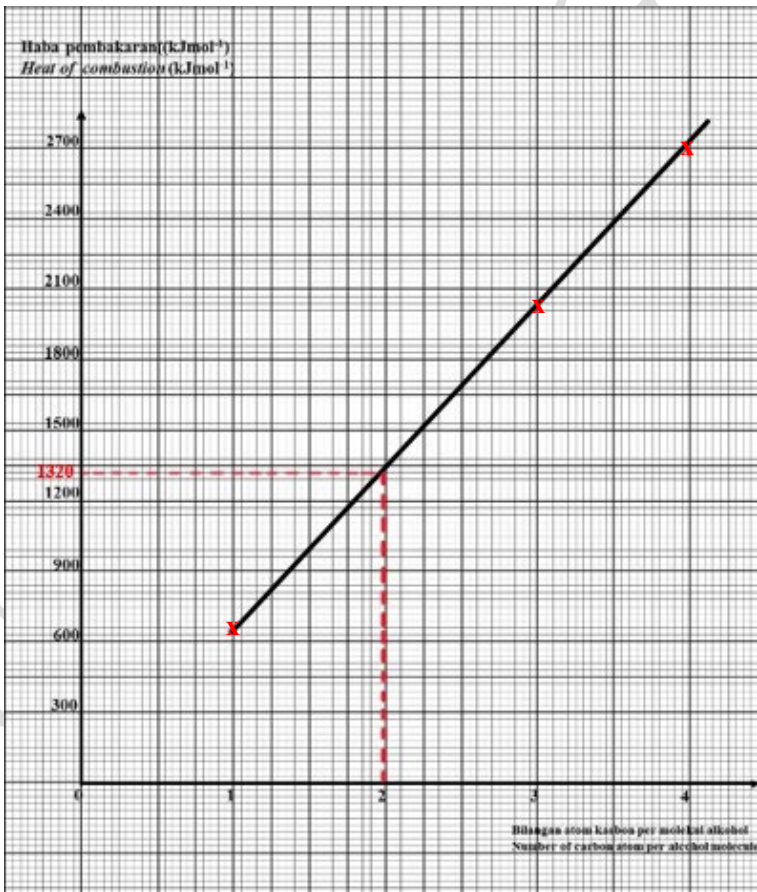
| Question No. |        | Mark Scheme                                                                                                                                                                                                                                                                                                                                                                                       | Sub Mark | ΣMark |  |  |  |   |  |   |   |  |   |   |  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------|--|--|--|---|--|---|---|--|---|---|--|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8            | (a)(i) | <p><b>[Dapat menyatakan nama lain bagi unsur kumpulan 18 dengan betul]</b></p> <p>Gas adi // <i>Noble gases</i></p>                                                                                                                                                                                                                                                                               | 1        | 1     |  |  |  |   |  |   |   |  |   |   |  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|              | (ii)   | <p><b>[Dapat menandakan unsur X pada jadual berkala unsur dengan betul]</b></p> <p>1.</p> <table border="1"><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td>U</td></tr><tr><td></td><td>W</td><td>X</td></tr><tr><td></td><td>Y</td><td>Z</td></tr><tr><td></td><td></td><td></td></tr></table> <p><b>[Dapat menulis susunan elektron unsur X dengan betul]</b></p> <p>2. 2.8.8</p> |          |       |  |  |  | U |  | W | X |  | Y | Z |  |  |  | 1<br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br>< |
|              |        |                                                                                                                                                                                                                                                                                                                                                                                                   |          |       |  |  |  |   |  |   |   |  |   |   |  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|              |        | U                                                                                                                                                                                                                                                                                                                                                                                                 |          |       |  |  |  |   |  |   |   |  |   |   |  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|              | W      | X                                                                                                                                                                                                                                                                                                                                                                                                 |          |       |  |  |  |   |  |   |   |  |   |   |  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|              | Y      | Z                                                                                                                                                                                                                                                                                                                                                                                                 |          |       |  |  |  |   |  |   |   |  |   |   |  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|              |        |                                                                                                                                                                                                                                                                                                                                                                                                   |          |       |  |  |  |   |  |   |   |  |   |   |  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

| Question No.  |        | Mark Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Sub Mark            | ΣMark |
|---------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------|
|               | (b)(i) | <b>[Dapat menulis persamaan kimia tindak balas dengan betul]</b><br><br>1. Formula bahan tindak balas dan hasil tindak balas<br>2. Persamaan seimbang<br><br>$2W + T_2 \rightarrow 2WT$ // $2Li + Cl_2 \rightarrow 2LiCl$                                                                                                                                                                                                                                                                            | 1<br>1              | 2     |
|               | (ii)   | <b>[Dapat menghuraikan pembentukan sebatian di (b)(i) dengan betul]</b><br><br>1. Untuk mencapai susunan elektron yang stabil, atom W menderma satu elektron valens membentuk ion $W^+$ // <i>To achieve a stable electron arrangement, W atom donates one electron to form <math>W^+</math> ion</i><br>2. Atom T menerima satu elektron untuk membentuk ion $T^-$ // <i>T atom receives one electron to form <math>T^-</math> ion.</i>                                                              | 1<br><br>1          | 2     |
|               | (c)    | <b>[Dapat mencadangkan kaedah yang sesuai dan mewajarkannya dengan betul]</b><br><br>1. Tambahkan air ke dalam bikar / Larutkan serbuk NaCl dalam air / Panaskan NaCl sehingga melebur// <i>Add water into the beaker / Dissolve NaCl powder into water/Heat NaCl until melted</i><br>2. Mengion menghasilkan ion-ion yang bebas bergerak// <i>Ionise to produce freely moving ions</i><br>3. Ion-ion membawa cas untuk mengkonduksi elektrik// <i>Ions carry the charges to conduct electricity</i> | 1<br><br>1<br><br>1 | 3     |
| <b>JUMLAH</b> |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>10</b>           |       |



| No. Soalan | Skema Pemarkahan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Markah                                                | ΣMarkah |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|---------|
| 9          | (a)(i)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                       | 7       |
|            | <p><b>[Dapat menyatakan maksud haba peneutralan dengan tepat]</b></p> <p>Perubahan haba apabila satu mol air terbentuk daripada tindak balas peneutralan antara asid dan alkali //</p> <p><i>The heat change when one mole of water is formed from the reaction between an acid and an alkali</i></p> <p><b>[Dapat mengenalpasti asid X dan asid Y dengan betul]</b></p> <p>Asid X : Asid hidroklorik / <i>Hydrochloric acid</i> / HCl //<br/> Asid nitrik / <i>nitric acid</i> / HNO<sub>3</sub><br/> Asid Y : Asid etanoik / CH<sub>3</sub>COOH // <i>Ethanoic acid</i></p> <p><b>[Dapat melakar gambarajah aras tenaga bagi eksperimen I dengan betul]</b></p> <p>1. Melukis bentuk aras tenaga bagi tindak balas eksotermik (label tenaga, aras tenaga yang betul, dan arah anak panah yang betul)</p> <p>2. Bahan tindak balas, hasil tindak balas dan nilai ΔH yang betul</p> <p><b>[Dapat mengenalpasti dua maklumat daripada gambar rajah aras tenaga dengan betul]</b></p> <p>1. Tindak balas antara natrium hidroksida / NaOH dan asid hidroklorik / HX membentuk natrium klorida / NaX dan air / H<sub>2</sub>O ialah tindak balas eksotermik / membebaskan haba ke persekitaran //</p> <p><i>The reaction between sodium hydroxide / NaOH and hydrochloric acid / HX forming sodium chloride / NaX and water / H<sub>2</sub>O is an exothermic reaction / release heat to surrounding</i></p> | <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> |         |

| No. Soalan | Skema Pemarkahan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Markah                     | ΣMarkah |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------|
|            | <p>2. Apabila 1 mol natrium hidroksida / NaOH bertindak balas dengan 1 mol HCl untuk membentuk 1 mol NaCl dan 1 mol air, sebanyak 57 kJ tenaga haba dibebaskan //</p> <p><i>When 1 mol of sodium hydroxide / NaOH react with 1 mol HX to form 1 mol of NaX and 1 mol of water, 57 kJ of heat is released to the surrounding</i></p> <p>3. Suhu larutan meningkat //</p> <p><i>The temperature of the mixture increases</i></p> <p>4. Jumlah kandungan tenaga hasil tindak balas lebih rendah daripada jumlah kandungan tenaga bahan tindak balas //</p> <p><i>The total energy content of the product is lower than the total energy content of the reactant</i></p> <p>5. Tenaga haba yang dibebaskan untuk membentuk ikatan lebih tinggi berbanding tenaga yang diserap untuk memutuskan ikatan //</p> <p><i>The heat energy released to form bonds is higher than the energy absorbed to break bonds</i></p> <p>[mana-mana dua jawapan]</p> | 1                          |         |
| (ii)       | <p><b>[Dapat menerangkan perbezaan haba peneutralan antara Set I dan Set II]</b></p> <p>1. Asid etanoik adalah asid lemah manakala asid HCl / HX adalah asid kuat.</p> <p><i>Ethanoic acid is a weak acid while HCl / HX is a strong acid.</i></p> <p>2. Asid HCl/HX mengion lengkap dalam air manakala CH<sub>3</sub>COOH/HY mengion separa lengkap dalam air//</p> <p><i>Acid HCl/HX ionizes completely in water while CH<sub>3</sub>COOH/HY ionizes partially completely in water</i></p> <p>3. Sebahagian haba yang dibebaskan, diserap oleh asid etanoik untuk mengion dengan lengkap. //</p> <p><i>Some of the heat released is absorbed by the ethanoic acid ionise completely.</i></p>                                                                                                                                                                                                                                                 | <p>1</p> <p>1</p> <p>1</p> | 3       |

| No. Soalan | Skema Pemarkahan                                                                                                                                                                                                                                                                                                                                                                                      | Markah                              | ΣMarkah |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|---------|
| (b)(i)     | <p><b>[Dapat menyatakan maksud haba pembakaran dengan betul]</b></p> <p>Haba yang dibebaskan apabila satu mol bahan bakar terbakar dengan lengkap dalam oksigen / O<sub>2</sub> berlebihan // <i>Heat released when one mole of a fuel is completely burnt in excess oxygen / O<sub>2</sub></i></p>                                                                                                   | 1                                   | 5       |
|            | <p><b>[Dapat melukis graf haba pembakaran melawan bilangan atom karbon per molekul alcohol dengan betul]</b></p> <ol style="list-style-type: none"> <li>1. Titik dipindahkan dengan betul</li> <li>2. Bentuk graf yang betul</li> <li>3. Tanda untuk menunjukkan nilai x</li> <li>4. Nilai x pada graf</li> </ol>  | <p>1</p> <p>1</p> <p>1</p> <p>1</p> |         |

| No. Soalan    | Skema Pemarkahan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Markah                                | ΣMarkah   |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------|
| (b)(ii)       | <p><b>[Dapat menulis persamaan kimia pembakaran butanol dengan betul]</b></p> <p>1. Formula bahan tindak balas dan hasil tindak balas<br/>2. Persamaan seimbang</p> $\text{C}_4\text{H}_9\text{OH} + 6\text{O}_2 \rightarrow 4\text{CO}_2 + 5\text{H}_2\text{O}$ <p><b>[Dapat menjelaskan pernyataan dengan betul]</b></p> <p>3. Bilangan atom karbon per molekul butanol adalah lebih banyak berbanding propanol // <i>the number of carbon atoms in butanol molecule is more than propanol.</i></p> <p>4. Butanol menghasilkan lebih banyak molekul karbon dioksida dan air berbanding propanol // <i>Butanol produces more carbon dioxide and water molecule compare to propanol</i></p> <p>5. Lebih banyak haba dibebaskan untuk membentuk ikatan dalam hasil tindak balas pembakaran bagi pembakaran butanol berbanding propanol // <i>More heat is released to form a bond in the product of combustion of butanol than propanol.</i></p> | <p>1<br/>1<br/><br/>1<br/>1<br/>1</p> | 5         |
| <b>JUMLAH</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                       | <b>20</b> |

| No. Soalan |     | Skema Pemarkahan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Markah                                                | ΣMarkah |
|------------|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|---------|
| 10         | (a) | <p><b>[Dapat menyatakan maksud formula molekul dengan betul]</b></p> <p>1. Formula molekul ialah formula kimia yang menunjukkan bilangan sebenar atom setiap jenis unsur dalam satu sebatian/molekul //</p> <p><i>Chemical formula that shows the actual number of atoms of each element in a compound/molecule</i></p> <p><b>[Dapat membandingkan formula molekul dan formula empirik benzena dengan betul]</b></p> <p>2. Kedua-dua formula molekul dan formula empirik benzena terdiri daripada unsur karbon dan hidrogen //</p> <p><i>Both the molecular formula and the empirical formula of benzene consist of the elements carbon and hydrogen</i></p> <p>3. Bilangan atom karbon dan atom hidrogen dalam formula molekul lebih banyak daripada formula empirik //</p> <p><i>The number of carbon atoms and hydrogen atoms in the molecular formula is more than the empirical formula.</i></p> <p>4. Jisim molekul relatif bagi formula molekul lebih besar daripada formula empirik //</p> <p><i>The relative molecular mass of the molecular formula is greater than the empirical formula.</i></p> <p>5. Setiap molekul benzena terdiri daripada 6 atom karbon dan 6 atom hidrogen //manakala formula empirik mempunyai 1 atom C dan 1 atom Hidrogen</p> <p><i>Each benzene molecule consists of 6 carbon atoms and 6 hydrogen atoms.// while empirical formula has 1 atom carbon and 1 atom hydrogen</i></p> <p>6. Nisbah paling ringkas bilangan atom karbon kepada hidrogen dalam formula molekul dan formula empirik benzena adalah 1:1 //</p> <p><i>The simplest ratio of the number of carbon atoms to hydrogen in molecular formula and empirical formula of benzene is 1:1</i></p> | <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> | 6       |

| No. Soalan                                                                                                                      |                                                                                                                          | Skema Pemarkahan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Markah                      | ΣMarkah                       |                                                                                   |  |                                                                                       |                                                                                                   |                                                                                                                                 |                                                                                                                          |                                                      |   |
|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-------------------------------|-----------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|---|
|                                                                                                                                 | (b)(i)                                                                                                                   | <p><b>[Dapat mencadangkan logam X dan oksida logam Y dengan betul]</b></p> <p>1. Logam X: Magnesium // Aluminium // Zink // <i>Zinc Metal X</i></p> <p>2. Oksida logam Y: Kuprum(II) oksida // Plumbum(II) oksida // Stanum oksida // Argentum oksida<br/><i>Metal oxide Y : Copper(II) oxide // Lead(II) oxide // Tin oxide // Silver oxide</i></p> <p><b>[Dapat membandingbeza Kaedah I dan Kaedah II dalam menentukan formula empirik oksida logam X dan oksida logam Y dengan betul]</b></p> <table><tr><th>Kaedah I<br/><i>Method I</i></th><th>Kaedah II<br/><i>Method II</i></th></tr><tr><td colspan="2">3. Kedua-dua kaedah melibatkan pemanasan//<br/><i>Boths method involve heating</i></td></tr><tr><td>4. Logam X bertindak balas dengan gas oksigen//<i>Metal X reactive toward oxygen</i></td><td>5. Oksida logam Y bertindakbalas dengan gas hidrogen//<i>Metal Y less reactive than hydrogen</i></td></tr><tr><td>6. Melibatkan pemanasan secara terus logam X dengan gas oksigen<br/>//<i>Involves direct heating of metal X with oxygen gas</i></td><td>7. Melibatkan aliran gas hidrogen ke atas logam oksida Y // <i>Involves the flow of hydrogen gas over metal oxide Y.</i></td></tr></table> | Kaedah I<br><i>Method I</i> | Kaedah II<br><i>Method II</i> | 3. Kedua-dua kaedah melibatkan pemanasan//<br><i>Boths method involve heating</i> |  | 4. Logam X bertindak balas dengan gas oksigen// <i>Metal X reactive toward oxygen</i> | 5. Oksida logam Y bertindakbalas dengan gas hidrogen// <i>Metal Y less reactive than hydrogen</i> | 6. Melibatkan pemanasan secara terus logam X dengan gas oksigen<br>// <i>Involves direct heating of metal X with oxygen gas</i> | 7. Melibatkan aliran gas hidrogen ke atas logam oksida Y // <i>Involves the flow of hydrogen gas over metal oxide Y.</i> | <p>1</p> <p>1</p> <p>1</p> <p>1 + 1</p> <p>1 + 1</p> | 7 |
| Kaedah I<br><i>Method I</i>                                                                                                     | Kaedah II<br><i>Method II</i>                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                             |                               |                                                                                   |  |                                                                                       |                                                                                                   |                                                                                                                                 |                                                                                                                          |                                                      |   |
| 3. Kedua-dua kaedah melibatkan pemanasan//<br><i>Boths method involve heating</i>                                               |                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                             |                               |                                                                                   |  |                                                                                       |                                                                                                   |                                                                                                                                 |                                                                                                                          |                                                      |   |
| 4. Logam X bertindak balas dengan gas oksigen// <i>Metal X reactive toward oxygen</i>                                           | 5. Oksida logam Y bertindakbalas dengan gas hidrogen// <i>Metal Y less reactive than hydrogen</i>                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                             |                               |                                                                                   |  |                                                                                       |                                                                                                   |                                                                                                                                 |                                                                                                                          |                                                      |   |
| 6. Melibatkan pemanasan secara terus logam X dengan gas oksigen<br>// <i>Involves direct heating of metal X with oxygen gas</i> | 7. Melibatkan aliran gas hidrogen ke atas logam oksida Y // <i>Involves the flow of hydrogen gas over metal oxide Y.</i> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                             |                               |                                                                                   |  |                                                                                       |                                                                                                   |                                                                                                                                 |                                                                                                                          |                                                      |   |

| No. Soalan                                                      | Skema Pemarkahan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Markah                     | ΣMarkah |   |                                  |                       |                       |                                     |                            |                            |                                                                 |   |   |                                                      |    |  |                                                                |   |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------|---|----------------------------------|-----------------------|-----------------------|-------------------------------------|----------------------------|----------------------------|-----------------------------------------------------------------|---|---|------------------------------------------------------|----|--|----------------------------------------------------------------|---|
| (b)(ii)                                                         | <p><b>[Dapat menyatakan warna oksida logam X dengan betul]</b></p> <p>1. Putih//<i>White</i></p> <p><b>[Dapat menentukan formula empirik oksida logam X dengan betul]</b></p> <p>2. Jisim X dan oksigen dengan unit</p> <p>3. Bilangan mol atom X dan oksigen</p> <p>4. Nisbah mol teringkas</p> <p>5. Formula empirik</p> <table><tr><th>Unsur<br/><i>Element</i></th><th>X</th><th>O</th></tr><tr><td>2. Jisim(g) // <br/><i>Mass(g)</i></td><td>25.0 – 22.6 // <br/>2.4</td><td>26.6 – 25.0 // <br/>1.6</td></tr><tr><td>3. Bil mol <br/><i>Number of mole</i></td><td><math>\frac{2.4}{24}</math> // <br/>0.1</td><td><math>\frac{1.6}{16}</math> // <br/>0.1</td></tr><tr><td>4. Nisbah mol <br/>teringkas// <br/><i>Simplest mole <br/>ratio</i></td><td>1</td><td>1</td></tr><tr><td>5. Formula <br/>empirik // <br/><i>Empirical formula</i></td><td colspan="2">XO</td></tr></table> <p>6. Formula bahan tindak balas dan hasil tindak balas</p> <p>7. Persamaan seimbang</p> <p><i>*jawapan berdasarkan b(i)</i></p> <p><math>2X + O_2 \rightarrow 2XO</math> // <math>2Mg + O_2 \rightarrow 2MgO</math> //</p> <p><math>2Zn + O_2 \rightarrow 2ZnO</math> //</p> <p><math>4Al + 3O_2 \rightarrow 2Al_2O_3</math> // <math>4X + 3O_2 \rightarrow 2X_2O_3</math></p> | Unsur<br><i>Element</i>    | X       | O | 2. Jisim(g) //<br><i>Mass(g)</i> | 25.0 – 22.6 //<br>2.4 | 26.6 – 25.0 //<br>1.6 | 3. Bil mol<br><i>Number of mole</i> | $\frac{2.4}{24}$ //<br>0.1 | $\frac{1.6}{16}$ //<br>0.1 | 4. Nisbah mol<br>teringkas//<br><i>Simplest mole <br/>ratio</i> | 1 | 1 | 5. Formula<br>empirik //<br><i>Empirical formula</i> | XO |  | <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> | 7 |
| Unsur<br><i>Element</i>                                         | X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | O                          |         |   |                                  |                       |                       |                                     |                            |                            |                                                                 |   |   |                                                      |    |  |                                                                |   |
| 2. Jisim(g) //<br><i>Mass(g)</i>                                | 25.0 – 22.6 //<br>2.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 26.6 – 25.0 //<br>1.6      |         |   |                                  |                       |                       |                                     |                            |                            |                                                                 |   |   |                                                      |    |  |                                                                |   |
| 3. Bil mol<br><i>Number of mole</i>                             | $\frac{2.4}{24}$ //<br>0.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | $\frac{1.6}{16}$ //<br>0.1 |         |   |                                  |                       |                       |                                     |                            |                            |                                                                 |   |   |                                                      |    |  |                                                                |   |
| 4. Nisbah mol<br>teringkas//<br><i>Simplest mole <br/>ratio</i> | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1                          |         |   |                                  |                       |                       |                                     |                            |                            |                                                                 |   |   |                                                      |    |  |                                                                |   |
| 5. Formula<br>empirik //<br><i>Empirical formula</i>            | XO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                            |         |   |                                  |                       |                       |                                     |                            |                            |                                                                 |   |   |                                                      |    |  |                                                                |   |
| JUMLAH                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 20                         |         |   |                                  |                       |                       |                                     |                            |                            |                                                                 |   |   |                                                      |    |  |                                                                |   |

| No. Soalan |        | Skema Pemarkahan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Markah                                             | ΣMarkah |
|------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|---------|
| 11         | (a)(i) | <p><b>[Dapat menyatakan nama bagi mendakan kuning yang terhasil dan mengenal pasti dua faktor yang boleh mempengaruhi masa yang diambil untuk tanda 'X' hilang dengan betul]</b></p> <p>1. Sulfur // <i>Sulphur</i><br/> 2. Suhu // <i>Temperature</i><br/> 3. Kepekatan // <i>Concentration</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1<br>1<br>1                                        | 3       |
|            | (ii)   | <p><b>[Dapat menulis persamaan ion dan menghitung kadar tindak balas bagi Eksperimen I dan Eksperimen II dengan jawapan unit yang betul]</b></p> <p>1. Formula bahan tindak balas dan hasil tindak balas<br/> 2. Persamaan seimbang</p> $\text{S}_2\text{O}_3^{2-} + 2\text{H}^+ \rightarrow \text{SO}_2 + \text{H}_2\text{O} + \text{S}$ <p>3. Kadar tindak balas Eksperimen I // <i>Rate of reaction for Experiment I</i><br/> <math>= \frac{1}{40} \text{ s}^{-1} // 0.025 \text{ s}^{-1}</math></p> <p>4. Kadar tindak balas Eksperimen II // <i>Rate of reaction for Experiment II</i><br/> <math>= \frac{1}{20} \text{ s}^{-1} // 0.05 \text{ s}^{-1}</math></p> <p><b>[Dapat membandingkan kadar tindak balas di antara Eksperimen I dan Eksperimen II dengan memilih salah satu faktor yang dinyatakan di (a)(i) berdasarkan Teori Pelanggaran dengan betul]</b></p> <p><u>Faktor suhu // <i>Temperature factor</i></u></p> <p>5. Kadar tindak balas dalam Eksperimen II lebih tinggi daripada Eksperimen I // <i>Rate of reaction in Experiment II is higher than Experiment I.</i></p> <p>6. Suhu dalam Eksperimen II lebih tinggi daripada Eksperimen I // <i>Temperature in Experiment II is higher than Experiment I.</i></p> | 1<br>1<br><br>1<br><br>1<br><br><br><br>1<br><br>1 | 9       |

| No. Soalan | Skema Pemarkahan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Markah                                                                           | ΣMarkah |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|---------|
|            | <p>7. Tenaga kinetik zarah-zarah dalam Eksperimen II lebih tinggi daripada Eksperimen I //</p> <p><i>Kinetic energy of particles in Experiment II is higher than Experiment I.</i></p> <p>8. Frekuensi pelanggaran di antara ion tiosulfat / <math>\text{S}_2\text{O}_3^{2-}</math> dan ion hidrogen / <math>\text{H}^+</math> dalam Eksperimen II lebih tinggi daripada Eksperimen I //</p> <p><i>Frecuency of collision between thiosulphate ion / <math>\text{S}_2\text{O}_3^{2-}</math> and hydrogen ion / <math>\text{H}^+</math> in Experiment II is higher than Experiment I.</i></p> <p>9. Frekuensi pelanggaran berkesan antara zarah dalam Eksperimen II lebih tinggi daripada Eksperimen I //</p> <p><i>Frecuency of effective between particles in Experiment II is higher than Experiment I.</i></p> <p style="text-align: center;">Atau / Or</p> <p><u>Faktor kepekatan larutan natrium tiosulfat //</u></p> <p><u><i>Concentration of sodium thiosulphate solution factor</i></u></p> <p>5. Kadar tindak balas dalam Eksperimen II lebih tinggi daripada Eksperimen I //</p> <p><i>Rate of reaction in Experiment II is higher than Experiment I.</i></p> <p>6. Kepekatan larutan natrium tiosulfat dalam Eksperimen II lebih tinggi daripada Eksperimen I //</p> <p><i>The concentration of sodium thiosulphate solution in Experiment II is higher than Experiment I.</i></p> <p>7. Bilangan ion tiosulfat per unit isipadu dalam Eksperimen II lebih tinggi daripada Eksperimen I //</p> <p><i>The number of thiosulphate ion per unit volume in Experiment II is higher than Experiment I.</i></p> <p>8. Frekuensi pelanggaran di antara ion tiosulfat / <math>\text{S}_2\text{O}_3^{2-}</math> dan ion hidrogen / <math>\text{H}^+</math> dalam Eksperimen II lebih tinggi daripada Eksperimen I //</p> <p><i>Frecuency of collision between thiosulphate ion / <math>\text{S}_2\text{O}_3^{2-}</math> and hydrogen ion / <math>\text{H}^+</math> in Experiment II is higher than Experiment I.</i></p> <p>9. Frekuensi pelanggaran berkesan antara zarah dalam Eksperimen II lebih tinggi daripada Eksperimen I //</p> <p><i>Frecuency of effective between particles in Experiment II is higher than Experiment I.</i></p> | <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> |         |

| No. Soalan    | Skema Pemarkahan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Markah                                                                  | ΣMarkah |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|---------|
| (b)           | <p><b>[Dapat mencadangkan bahan Q dan menghuraikan bagaimana bahan Q dapat memberi kesan kepada kadar tindak balas dalam makmal dengan betul]</b></p> <ol style="list-style-type: none"> <li>1. Larutan Kuprum(II) sulfat / <math>\text{CuSO}_4</math> // <i>Copper(II) sulphate solution</i></li> <li>2. Masukkan <math>(25-100) \text{ cm}^3</math> asid hidroklorik <math>(0.5-2.0) \text{ mol dm}^{-3}</math> ke dalam kelalang kon. // <i>Pour <math>(25-100) \text{ cm}^3</math> of <math>(0.5-2.0) \text{ mol dm}^{-3}</math> of hydrochloric acid into a conical flask.</i></li> <li>3. Penuhkan buret dengan air dan telangkupkannya ke dalam besen berisi air.// <i>Fill the burette with water and invert it into a basin filled with water.</i></li> <li>4. Apitkan buret secara menegak. // <i>Clamp the burette vertically.</i></li> <li>5. Masukkan <math>(2-5) \text{ g}</math> ketulan zink ke dalam kelalang Kon dan tutupkan kelalang kon dengan gabus yang bersambung ke salur penghantar dengan serta merta. // <i>Add <math>(2-5) \text{ g}</math> zinc granule into a conical flask and immediately close the conical flask with the rubber stopper which is connected to a delivery tube.</i></li> <li>6. Mulakan jam randik dan goyangkan kelalang kon secara perlahan-lahan sepanjang eksperimen. // <i>Start the stopwatch and slowly swirl the conical flask.</i></li> <li>7. Rekodkan bacaan buret pada setiap sela masa 30 s. // <i>Record the burette reading at intervals of 30 s.</i></li> <li>8. Ulang langkah 2-7 dengan manambahkan <math>(1-5) \text{ cm}^3</math> / beberapa titis larutan kuprum(II) sulfat ke dalam kelalang kon. // <i>Repeat step 2-7 by adding <math>(1-5) \text{ cm}^3</math> / a few drops copper(II) sulphate solution in a conical flask.</i></li> </ol> | <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> | 8       |
| <b>JUMLAH</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>20</b>                                                               |         |

**PERATURAN PEMARKAHAN TAMAT**  
**END OF MARKING SCHEME**