



## **MODUL KECEMERLANGAN SPM 2025**

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### **SAINS KERTAS 1 PERATURAN PEMARKAHAN**

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| NO.SOALAN | JAWAPAN |
|-----------|---------|
| 1.        | C       |
| 2.        | C       |
| 3.        | D       |
| 4.        | A       |
| 5.        | C       |
| 6.        | C       |
| 7.        | B       |
| 8.        | C       |
| 9.        | B       |
| 10.       | A       |
| 11.       | D       |
| 12.       | C       |
| 13.       | A       |
| 14.       | A       |
| 15.       | C       |
| 16.       | D       |
| 17.       | B       |
| 18.       | A       |
| 19.       | D       |
| 20.       | D       |
| 21.       | C       |
| 22.       | B       |
| 23.       | A       |
| 24.       | A       |
| 25.       | A       |
| 26.       | D       |
| 27.       | C       |
| 28.       | D       |
| 29.       | B       |
| 30.       | C       |
| 31.       | B       |
| 32.       | A       |
| 33.       | B       |
| 34.       | C       |
| 35.       | D       |
| 36.       | D       |
| 37.       | D       |
| 38.       | B       |
| 39.       | D       |
| 40.       | C       |

PERATURAN PEMARKAHAN TAMAT

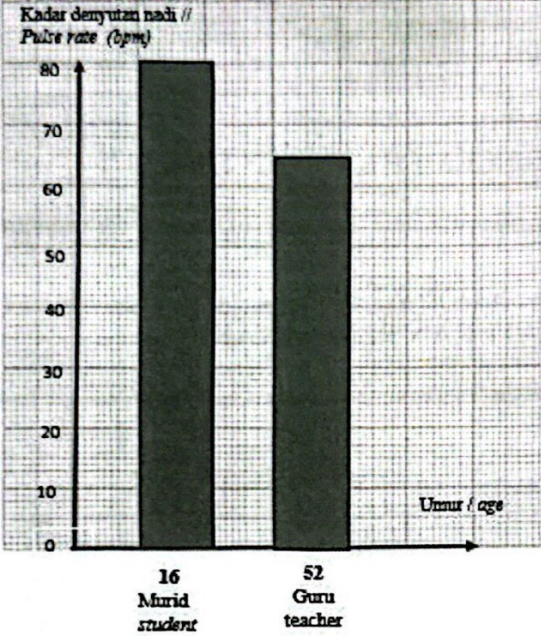


## **MODUL KECEMERLANGAN SPM 2025**

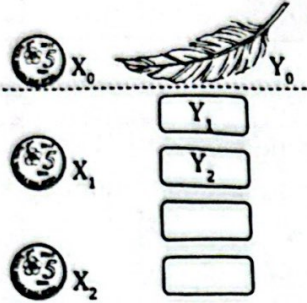
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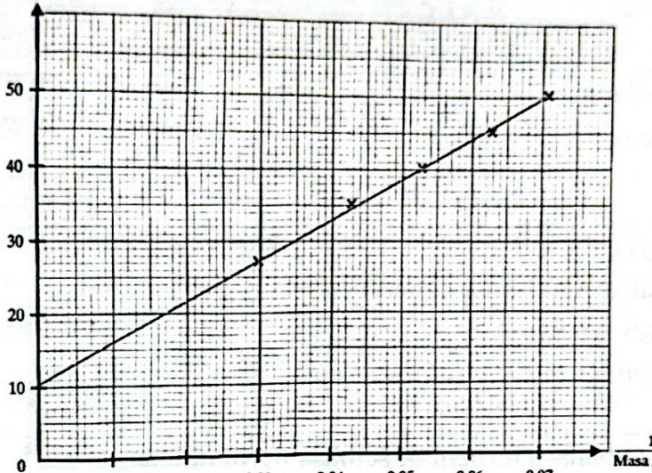
### **SAINS KERTAS 2 PERATURAN PEMARKAHAN**

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| SOALAN    | PERATURAN PEMARKAHAN                                                                                                                                                                                                                                                                                                                                                         | SUB MARKAH | JUMLAH MARKAH |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------|
| 1. (a)(i) |  <p>Kadar denyutan nadi // Pulse rate (bpm)</p> <p>Umur / age</p> <p>16 Murid student</p> <p>52 Guru teacher</p>                                                                                                                                                                           | 1          | 2             |
| (a)(ii)   | <p>Kadar denyutan nadi guru adalah rendah berbanding murid kerana kadar metabolisme badan menurun/berkurang// pengambilan ubat// perubahan keadaan jantung akibat penyakit</p> <p><i>The teacher's heart rate is lower compared to the students because the body's metabolic rate decreases/reduces// medication intake// changes in heart condition due to illness.</i></p> | 1          | 1             |
| (b)(i)    | <p>Memerhati dan merekodkan kadar denyutan nadi dengan menggunakan jam randik.</p> <p><i>Observing and recording the pulse rate using a stopwatch.</i></p>                                                                                                                                                                                                                   | 1          | 1             |
| (c)       | <p>Menggunakan jam randik digital.</p> <p>Menggunakan 'smartwatch'/'sportwatch'</p> <p><i>Using a digital stopwatch.</i></p> <p><i>Using a 'smartwatch'/'sportwatch'.</i></p>                                                                                                                                                                                                | 1          | 1             |
| JUMLAH    |                                                                                                                                                                                                                                                                                                                                                                              |            | 5             |

| SOALAN |               | PERATURAN PEMARKAHAN                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | SUB MARKAH | JUMLAH MARKAH |
|--------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------|
| 2.     | (a) (i)       | 6 dan 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1          | 1             |
|        | (ii)          | 71                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1          | 1             |
|        | (b)           | <p>Purata ketinggian anak benih kacang hijau adalah 71 pada hari ke-7 manakala purata ketinggian anak benih kacang hijau adalah 15 pada hari ke-3</p> <p><i>The average height of green bean seedlings was 71 on day 7 while the average height of green bean seedlings was 15 on day 3.</i></p> <p><i>*boleh membuat perbandingan antara 2 data ekstrem</i><br/> <i>*can make a comparison between 2 extreme data</i></p>                                                                        | 1          | 1             |
|        | (c)           | <p>Pertumbuhan tumbuhan adalah proses yang menyebabkan purata ketinggian anak benih kacang hijau pada hari ke-7 lebih tinggi (berbanding hari ke-5) apabila 3 biji kacang hijau direndamkan di dalam piring petri berisi air sehingga kembang selama 7 hari.</p> <p><i>Plant growth is the process that causes the average height of corn seedlings on day 7 to be higher than (on day 5) when 3 green beans are soaked in a petri dish filled with water until they sprout within 7 days</i></p> | 1          | 1             |
|        | (d)           | <p>Pembaris // pita pengukur<br/> <i>Ruler // measuring tape</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                              | 1          | 1             |
|        | <b>JUMLAH</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            | <b>5</b>      |

| SOALAN |     | PERATURAN PEMARKAHAN                                                                                                                                                                                                                                                                                                                                                                                                                 | SUB MARKAH    | JUMLAH MARKAH |
|--------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------|
| 3      | (a) |                                                                                                                                                                                                                                                                                                                                                     | 1             | 1             |
|        | (b) | <p>Masa jatuhnya objek (duit syiling) lebih cepat kerana kurang rintangan udara (luas permukaan kecil).<br/>Masa jatuhnya objek (bulu) lebih lama kerana rintangan udara bertambah (luas permukaan besar)</p> <p><i>The fall time of the object (coin) is faster because of less air resistance (small surface area). The fall time of the object (feather) is longer because air resistance increases (large surface area).</i></p> | 1             | 1             |
|        | (c) | <p>Masa jatuhnya yang dilalui oleh objek.<br/><i>Time travelled by object</i></p>                                                                                                                                                                                                                                                                                                                                                    | 1             | 1             |
|        | (d) | <p>Rintangan udara adalah keadaan yang menyebabkan masa jatuhnya yang dilalui oleh objek lebih lama apabila duit syiling/bulu dilepaskan pada ketinggian <math>X_0/Y_0</math>.<br/><i>Air resistance is a condition that causes the time of fall experienced by an object to be longer when a coin/feather is released from a height of <math>X_0/Y_0</math>.</i></p>                                                                | 1             | 1             |
|        | (e) | <p>Payung terjun akan dibuka/mengembang dan menambahkan luas permukaan (untuk memerangkap udara bagi memperoleh rintangan udara yang besar)<br/><i>The parachute will be opened/expanded and will increase its surface area (to trap air in order to achieve a large air resistance).</i></p>                                                                                                                                        | 1             | 1             |
|        |     |                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>JUMLAH</b> | <b>5</b>      |

| SOALAN |     | PERATURAN PEMARKAHAN                                                                                                                                                                                | SUB MARKAH | JUMLAH MARKAH |
|--------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------|
| 4      | (a) | 0.053                                                                                                                                                                                               | 1          | 1             |
|        | (b) | <p>Suhu larutan natrium tiosulfat (°C)<br/>Temperature of sodium thiosulphate solution (°C)</p>  <p>Masa / s</p> | 2          | 2             |
|        | (c) | <p>Semakin tinggi suhu bahan tindak balas, semakin tinggi kadar tindak balas.<br/><i>The higher the temperature of the reactants, the higher the rate of reaction.</i></p>                          | 1          | 1             |
|        | (d) | <p>Menggunakan air panas untuk melarutkan gula dengan cepat.<br/><i>Use hot water to make sugar dissolve quickly.</i></p> <p>*mana-mana jawapan yang sesuai<br/><i>any suitable answers</i></p>     | 1          | 1             |

| SOALAN |         | PERATURAN PEMARKAHAN                                                                                                                                                   | SUB MARKAH | JUMLAH MARKAH |
|--------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------|
| 5.     | (a) (i) | Meiosis<br><i>Meiosis</i>                                                                                                                                              | 1          | 1             |
|        | (ii)    | Pindah silang<br><i>Crossing over</i>                                                                                                                                  | 1<br>1     | 1             |
|        | (iii)   | 1. Menyebabkan variasi<br>2. Bertukar maklumat genetik<br><i>1. Causes variation</i><br><i>2. Exchanges genetic information</i>                                        | 1<br>1     | 2             |
|        | (b)     | 1. Sel-sel baharu terbentuk semasa pertumbuhan<br>2. Menambah bilangan sel<br><i>1. New cells are formed during growth</i><br><i>2. Increases the number of cells.</i> | 1<br>1     | 2             |
|        |         | <b>JUMLAH</b>                                                                                                                                                          |            | <b>6</b>      |

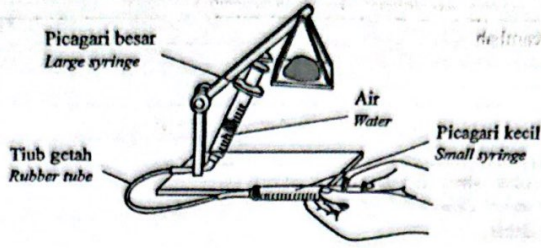
| SOALAN |         | PERATURAN PEMARKAHAN                                                                                    | SUB MARKAH | JUMLAH MARKAH |
|--------|---------|---------------------------------------------------------------------------------------------------------|------------|---------------|
| 6.     | (a)     | Pembelahan nukleus<br><i>Nuclear fission</i>                                                            | 1          | 1             |
|        | (b)     | Uranium-235<br><i>Uranium-235</i>                                                                       | 1          | 1             |
|        | (c) (i) | Tindak balas berantai<br><i>Chain reaction</i>                                                          | 1          | 1             |
|        | (ii)    | Reaktor nuklear<br><i>Nuclear reactor</i>                                                               | 1          | 1             |
|        | (d)     | Tidak mungkin berlaku<br><br>Kerana kesan penolakan antara proton dengan nukleus P akibat cas yang sama | 2          | 2             |

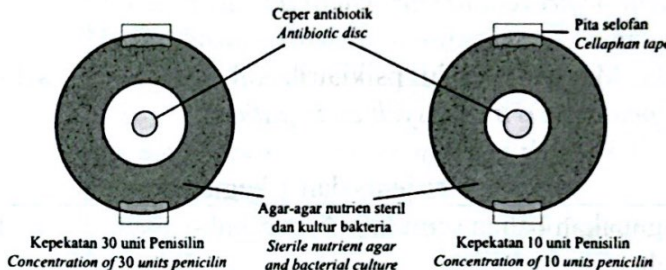


| SOALAN |     | SKEMA PEMARKAHAN                                                                                                                                                                                                                                                                                                     | SUB MARKAH                   | JUMLAH MARKAH |
|--------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|---------------|
| 8      | (a) | Perisa/perasa<br><i>Flavouring/ seasoning</i>                                                                                                                                                                                                                                                                        | 1                            | 1             |
|        | (b) | Kanser// Tekanan darah tinggi// Merosakkan hati<br><i>Cancer// High blood pressure// Damages the liver</i>                                                                                                                                                                                                           | 1                            | 1             |
|        | (c) | <b>Persamaan/ Similarity:</b><br>Kedua-duanya menjadikan makanan tahan lebih lama/ menghalang pertumbuhan mikroorganisma<br><i>Both makes food last longer/ inhibits the growth of microorganisms</i>                                                                                                                | 1                            | 2             |
|        |     | <b>Perbezaan/ Difference:</b><br>Makanan P diproses melalui kaedah pengetinan manakala makanan Q melalui proses pengeringan<br><i>The taste of the food is different// food P is processed through canning method and food Q through drying process</i>                                                              | 1                            |               |
|        | (d) | <b>Wajar/ Reasonable</b><br>1) Sebagai antioksidan<br>2) Meningkatkan keimunan<br><i>1) As an antioxidant</i><br><i>2) Improves immunity</i><br><br><b>ATAU/ OR</b><br><b>Tidak wajar/ Unreasonable</b><br>Loya/ muntah/ cirit-birit jika diambil berlebihan<br><i>Nausea/ vomiting/ diarrhea if taken in excess</i> | 1<br>1<br><br><br><br>1<br>1 | 2             |
|        |     | <b>JUMLAH</b>                                                                                                                                                                                                                                                                                                        |                              | <b>6</b>      |

| SOALAN |     | SKEMA PEMARKAHAN                                                                                                                                                                                                                                                                                                                                                                                                                                                         | SUB MARKAH          | JUMLAH MARKAH |
|--------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------|
| 9      | (a) | <i>Penicillium</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1                   | 1             |
|        | (b) | 1) Menghasilkan antibiotik<br>2) Menghasilkan penisilin<br>3) Membunuh bakteria<br><i>1) Produce antibiotics</i><br><i>2) Produce penicillin</i><br><i>3) Kill bacteria.</i>                                                                                                                                                                                                                                                                                             | 1                   | 1             |
|        | (c) | 1. Mikroorganisma lebih mesra alam<br>2. Proses pengeluaran lebih murah<br><i>1. Microorganisms are more environmentally friendly</i><br><i>2. The production process is cheaper</i>                                                                                                                                                                                                                                                                                     | 1<br>1              | 2             |
|        | (d) | 1. Masukkan sisa buah-buahan ke dalam botol plastik<br><i>Put the leftover fruits into the plastic bottle.</i><br><br>2. Campurkan air dan gula perang ke dalam botol plastik<br><i>Mix water and brown sugar into a plastic bottle.</i><br><br>3. Tutup dan simpan di tempat teduh selama 1 bulan dan buka penutup sedikit sekali-sekala untuk melepaskan gas.<br><i>Store in a shady place for 3 months and open the lid slightly occasionally to release the gas.</i> | 1<br><br>1<br><br>1 | 3             |
|        |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>JUMLAH</b>       | <b>7</b>      |

| SOALAN |         | PERATURAN PEMARKAHAN                                                                                                                                                                                                                                                                        | SUB MARKAH | JUMLAH MARKAH |
|--------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------|
| 10     | (a) (i) | Prinsip Paskal                                                                                                                                                                                                                                                                              | 1          | 1             |
|        | (ii)    | Kerana air mampu memindahkan tekanan yang sama ke semua arah dalam sistem tertutup.<br><i>Because water can transfer the same pressure in all directions within a closed system.</i>                                                                                                        | 1          | 1             |
|        | (iii)   | F : Terdapat lubang / bocor pada kerusi<br>P : Menyebabkan tekanan bendalir tidak dapat dipindahkan secara seragam / sama ke semua arah<br><i>F: There is a hole/leak in the chair</i><br><i>E: It causes the fluid pressure to not be transferred uniformly/equally in all directions.</i> | 1<br><br>1 | 2             |
|        | (b)     | 1. Semua bahan dan radas digunakan dan berlabel<br>2. Kedudukan picagari yang betul<br><i>1. All materials and apparatus are used and labeled</i><br><i>2. Correct positioning of the syringe</i>                                                                                           | 1<br>1     | 3             |

|  |  |                                                                                                                                                                                                                                                                                                                                                                                                                 |        |   |
|--|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---|
|  |  |  <p>Penerangan :</p> <p>1. Apabila Picagari kecil ditolak, tekanan pada picagari kecil dipindahkan ke picagari besar dan beban tertolak ke atas</p> <p><i>Explanation:</i></p> <p>1. When a small syringe is pushed, the pressure in the small syringe is transferred to the large syringe and the load is pushed upwards.</p> | 1      |   |
|  |  |                                                                                                                                                                                                                                                                                                                                                                                                                 | JUMLAH | 7 |

| SOALAN                                                                |                                                                                   | PERATURAN PEMARKAHAN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | SUB MARKAH                                                            | JUMLAH MARKAH                                                                     |    |   |    |    |   |   |
|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------|----|---|----|----|---|---|
| 11                                                                    | (a)                                                                               | Apakah kesan kepekatan antibiotik terhadap pertumbuhan bakteria?<br><i>What is the effect of antibiotic concentration on bacterial growth?</i>                                                                                                                                                                                                                                                                                                                                                                                                    | 1                                                                     | 1                                                                                 |    |   |    |    |   |   |
|                                                                       | (b)                                                                               | Semakin tinggi kepekatan antibiotik, semakin rendah pertumbuhan bakteria<br><i>The higher the concentration of antibiotics, the lower the growth of bacteria.</i>                                                                                                                                                                                                                                                                                                                                                                                 | 1                                                                     | 1                                                                                 |    |   |    |    |   |   |
|                                                                       | (c) (i)                                                                           | Kepekatan antibiotik<br><i>Antibiotic concentration</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1                                                                     | 1                                                                                 |    |   |    |    |   |   |
|                                                                       | (ii)                                                                              | Jenis kultur bakteria//isipadu agar-agar nutrient<br><i>Types of bacterial culture//volume of nutrient agar</i>                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1                                                                     | 1                                                                                 |    |   |    |    |   |   |
|                                                                       | (d)                                                                               | <div></div> <p>2 lakaran berbeza kepekatan - 2 markah<br/>Label rajah -1 markah<br/><i>2 sketches of different concentrations - 2 marks</i><br/><i>Label the figure - 1 mark</i></p>                                                                                                                                                                                                                                                                           | 3                                                                     | 3                                                                                 |    |   |    |    |   |   |
|                                                                       | (e)                                                                               | Luas kawasan jernih pada ceper antibiotik 30 unit adalah lebih besar berbanding antibiotik 10 unit penisilin.//<br><i>The clear zone area on the 30 unit antibiotic disk is larger compared to the 10 unit penicillin antibiotic.//</i><br><table border="1"><thead><tr><th>Kepekatan Antibiotik (unit)<br/><i>Antibiotic Concentration (unit)</i></th><th>Luas kawasan jernih (mm<sup>2</sup>)<br/><i>Clear area size (mm<sup>2</sup>)</i></th></tr></thead><tbody><tr><td>10</td><td>5</td></tr><tr><td>30</td><td>10</td></tr></tbody></table> | Kepekatan Antibiotik (unit)<br><i>Antibiotic Concentration (unit)</i> | Luas kawasan jernih (mm <sup>2</sup> )<br><i>Clear area size (mm<sup>2</sup>)</i> | 10 | 5 | 30 | 10 | 1 | 1 |
| Kepekatan Antibiotik (unit)<br><i>Antibiotic Concentration (unit)</i> | Luas kawasan jernih (mm <sup>2</sup> )<br><i>Clear area size (mm<sup>2</sup>)</i> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                       |                                                                                   |    |   |    |    |   |   |
| 10                                                                    | 5                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                       |                                                                                   |    |   |    |    |   |   |
| 30                                                                    | 10                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                       |                                                                                   |    |   |    |    |   |   |
|                                                                       | (f)                                                                               | 1. Pastikan piring petri ditutup dengan rapat menggunakan pita selofan<br>2. Pastikan tangan dibasuh dengan sabun sebelum dan selepas menjalankan eksperimen<br>3. Menjalankan eksperimen dengan masa yang sama iaitu                                                                                                                                                                                                                                                                                                                             | 1<br>1                                                                | 2                                                                                 |    |   |    |    |   |   |

|  |  |                                                                                                                                                                                                                                 |              |           |
|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------|
|  |  | 3 hari<br>1. Make sure the petri dish is tightly closed with cellophane tape.<br>2. Ensure hands are washed with soap before and after conducting the experiment.<br>3. Conduct the experiment for the same duration of 3 days. | *mana-mana 2 |           |
|  |  | <b>JUMLAH</b>                                                                                                                                                                                                                   |              | <b>10</b> |

| SOALAN                                                                                                                                     |                                                                                      | PERATURAN PEMARKAHAN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | SUB MARKAH                                            | JUMLAH MARKAH                            |                                                                                                                                            |  |                                |  |                                                                             |                                                                                      |                                 |   |
|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------|--|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------|---|
| 12                                                                                                                                         | (a)                                                                                  | Analgesik : Melegakan kesakitan<br><i>Analgesic : Relief the pain</i><br><br>Antibiotik : Membunuh atau menghalang pertumbuhan bakteria<br><i>Antibiotics : Kill or prevent the growth of bacteria</i><br><br>Psikoterapeutik - Merawat pesakit psikiatrik<br><i>Physchotherapeutic : To treat psychiatric patient</i><br><br>*1 jenis dan 1 kegunaannya                                                                                                                                                                                                                 | 1+1<br><br><br>1+1<br><br><br>1+1                     | 2                                        |                                                                                                                                            |  |                                |  |                                                                             |                                                                                      |                                 |   |
|                                                                                                                                            | (b)                                                                                  | 1. Menggunakan bahan semula jadi/ tumbuh-tumbuhan.<br><i>Use natural substances / plants</i><br>2. Keberkesanan rawatan lebih perlahan.<br><i>Effectiveness of treatment takes longer time</i><br>3. Kos rawatan yang rendah.<br><i>Cost for treatment is cheap.</i><br>4. Ilmu diwarisi daripada turun-temurun<br><i>Inherit the knowledge from ancestor</i><br>5. Pembuktian keberkesanan secara pengalaman<br><i>The proof of effectiveness is based on the experiences</i><br><br>*mana-mana 2 / any 2                                                               | 1<br><br><br>1<br><br><br>1<br><br><br>1<br><br><br>1 | 2                                        |                                                                                                                                            |  |                                |  |                                                                             |                                                                                      |                                 |   |
|                                                                                                                                            | (c)                                                                                  | <table border="1"><tr><td><b>Rajah 12.2</b><br/><i>Diagram 12.2</i></td><td><b>Rajah 12.3</b><br/><i>Diagram 12.3</i></td></tr><tr><td colspan="2"><b>Persamaan / similarity:</b><br/>Kedua-duanya bertujuan untuk mengekalkan kesihatan yang baik<br/><i>Both aim to maintain good health.</i></td></tr><tr><td colspan="2"><b>Perbezaan / Differences</b></td></tr><tr><td>Perlu diambil dalam kuantiti yang banyak untuk mendapatkan kesan yang baik.</td><td>Diambil dalam kuantiti yang kecil / sedikit untuk mendapatkan kesan yang baik.<br/>//</td></tr></table> | <b>Rajah 12.2</b><br><i>Diagram 12.2</i>              | <b>Rajah 12.3</b><br><i>Diagram 12.3</i> | <b>Persamaan / similarity:</b><br>Kedua-duanya bertujuan untuk mengekalkan kesihatan yang baik<br><i>Both aim to maintain good health.</i> |  | <b>Perbezaan / Differences</b> |  | Perlu diambil dalam kuantiti yang banyak untuk mendapatkan kesan yang baik. | Diambil dalam kuantiti yang kecil / sedikit untuk mendapatkan kesan yang baik.<br>// | <br><br><br>1<br><br><br>1<br>1 | 4 |
| <b>Rajah 12.2</b><br><i>Diagram 12.2</i>                                                                                                   | <b>Rajah 12.3</b><br><i>Diagram 12.3</i>                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                       |                                          |                                                                                                                                            |  |                                |  |                                                                             |                                                                                      |                                 |   |
| <b>Persamaan / similarity:</b><br>Kedua-duanya bertujuan untuk mengekalkan kesihatan yang baik<br><i>Both aim to maintain good health.</i> |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                       |                                          |                                                                                                                                            |  |                                |  |                                                                             |                                                                                      |                                 |   |
| <b>Perbezaan / Differences</b>                                                                                                             |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                       |                                          |                                                                                                                                            |  |                                |  |                                                                             |                                                                                      |                                 |   |
| Perlu diambil dalam kuantiti yang banyak untuk mendapatkan kesan yang baik.                                                                | Diambil dalam kuantiti yang kecil / sedikit untuk mendapatkan kesan yang baik.<br>// |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                       |                                          |                                                                                                                                            |  |                                |  |                                                                             |                                                                                      |                                 |   |

|  |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                |                                            |           |
|--|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------|
|  |     | <i>// Taken in a high quantity for the good health effect</i><br>Mempunyai serat yang banyak //<br><i>Contain high fibre</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <i>Taken in small / little for the good health effect</i><br>Tidak / Kurang serat //<br><i>No / less fibre</i> | 1                                          |           |
|  |     | Tidak tahan lama //<br><i>Cannot last longer</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Tahan lebih lama //<br><i>Lasts longer</i>                                                                     | 1                                          |           |
|  |     | Kos lebih murah //<br><i>Low cost</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Kos lebih mahal //<br><i>Higher in cost</i>                                                                    |                                            |           |
|  | (d) | <ul style="list-style-type: none"> <li>• Tidak mengandungi dadah atau bahan sintetik kimia.<br/><i>Do not contain drugs or chemical synthetic substance.</i></li> <li>• Tidak melibatkan pembedahan atau jahitan pada tubuh.<br/><i>Do not involve surgery or suture on a body.</i></li> <li>• Ubat yang diberikan menguatkan keupayaan badan.<br/><i>The medication given strengthens the body's capabilities.</i></li> <li>• Rawatan secara holistik merangkumi fizikal, mental dan emosi.<br/><i>Holistic treatment encompasses physical, mental, and emotional aspects.</i></li> <li>• Kos rawatan yang rendah.<br/><i>Low treatment costs.</i></li> <li>• Kurang menyakitkan<br/><i>Less painful</i></li> </ul> |                                                                                                                | 1<br><br>1<br>1<br><br>1<br><br>1<br><br>1 | 4         |
|  |     | <b>JUMLAH</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                |                                            | <b>12</b> |

| SOALAN                                       |                                                                                                                                                                                                                                  | PERATURAN PEMARKAHAN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | SUB MARKAH                                   | JUMLAH MARKAH          |                                          |                                                                                                         |                                          |                                                                                                                                                                                                                                  |                                            |   |
|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|------------------------|------------------------------------------|---------------------------------------------------------------------------------------------------------|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|---|
| 13                                           | (a)                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>Mikroplastik mempunyai toksik plastik dan bersifat karsinogen.<br/><i>Microplastics have toxic plastic and are carcinogenic</i></li> <li>Boleh masuk melalui siratan makanan.<br/><i>Can enter through food webs</i></li> <li>Menyebabkan penyakit barah//gangguan sistem keimunan // kecacatan pada fetus dan manusia//alahan<br/><i>Causes cancer//immune system disorders//birth defects in fetuses and humans//allergic</i></li> </ul> <p>*mana-mana 2<br/><i>any 2</i></p>                                                                                       | 1<br><br><br>1<br><br><br>1                  | 2                      |                                          |                                                                                                         |                                          |                                                                                                                                                                                                                                  |                                            |   |
|                                              | (b)                                                                                                                                                                                                                              | <p>F : Upcycle<br/>P: Proses untuk menukarkan barang-barangan yang dibuang kepada sesuatu yang berharga dan mempunyai nilai yang tinggi.<br/><i>The process of transforming discarded materials or products into something of higher quality or value</i></p>                                                                                                                                                                                                                                                                                                                                                | 1<br>1                                       | 2                      |                                          |                                                                                                         |                                          |                                                                                                                                                                                                                                  |                                            |   |
|                                              | (c)                                                                                                                                                                                                                              | <table> <tr> <th>Jenis pencemaran<br/><i>Type of pollution</i></th> <th>Kesan<br/><i>Effect</i></th> </tr> <tr> <td>Pencemaran air<br/><i>Water pollution</i></td> <td>Penularan penyakit berjangkit seperti kolera/taun.<br/><i>Spread infectious diseases such as cholera</i></td> </tr> <tr> <td>Pencemaran udara<br/><i>Air pollution</i></td> <td>Pereputan sisa organik menyebabkan sakit kepala dan penyakit saluran pernafasan/semput/pneumonia/bronkitis.<br/><i>The decomposition of organic waste causes headaches and respiratory illnesses/asthma/pneumonia/bronchitis.</i></td> </tr> </table> | Jenis pencemaran<br><i>Type of pollution</i> | Kesan<br><i>Effect</i> | Pencemaran air<br><i>Water pollution</i> | Penularan penyakit berjangkit seperti kolera/taun.<br><i>Spread infectious diseases such as cholera</i> | Pencemaran udara<br><i>Air pollution</i> | Pereputan sisa organik menyebabkan sakit kepala dan penyakit saluran pernafasan/semput/pneumonia/bronkitis.<br><i>The decomposition of organic waste causes headaches and respiratory illnesses/asthma/pneumonia/bronchitis.</i> | <br><br><br>1+1<br><br><br><br><br><br>1+1 | 4 |
| Jenis pencemaran<br><i>Type of pollution</i> | Kesan<br><i>Effect</i>                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                              |                        |                                          |                                                                                                         |                                          |                                                                                                                                                                                                                                  |                                            |   |
| Pencemaran air<br><i>Water pollution</i>     | Penularan penyakit berjangkit seperti kolera/taun.<br><i>Spread infectious diseases such as cholera</i>                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                              |                        |                                          |                                                                                                         |                                          |                                                                                                                                                                                                                                  |                                            |   |
| Pencemaran udara<br><i>Air pollution</i>     | Pereputan sisa organik menyebabkan sakit kepala dan penyakit saluran pernafasan/semput/pneumonia/bronkitis.<br><i>The decomposition of organic waste causes headaches and respiratory illnesses/asthma/pneumonia/bronchitis.</i> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                              |                        |                                          |                                                                                                         |                                          |                                                                                                                                                                                                                                  |                                            |   |
|                                              | (d)                                                                                                                                                                                                                              | <p>1) Mengelakkan pembaziran kerana makanan disediakan mengikut keperluan.<br/><i>Avoid food waste because food is prepared according to needs.</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1                                            | 4                      |                                          |                                                                                                         |                                          |                                                                                                                                                                                                                                  |                                            |   |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                            |           |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------|
|  | <p>2) Mengurangkan sisa makanan di kedai makan kerana mengunjung memesan makanan mengikut keperluan.<br/><i>Reduce food waste at restaurants by ordering food according to needs.</i></p> <p>3) Menjimatkan wang kerana kos perbelanjaan makanan dikurangkan.<br/><i>Save money because food expenses are reduced</i></p> <p>4) Mengelakkan daripada berlakunya pencemaran alam sekitar akibat pembuangan sisa makanan.<br/><i>Prevent environmental pollution due to food waste disposal.</i></p> <p>*mana-mana yang sesuai<br/><i>any suitable one</i></p> | <p>1</p> <p>1</p> <p>1</p> |           |
|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>TOTAL</b>               | <b>12</b> |