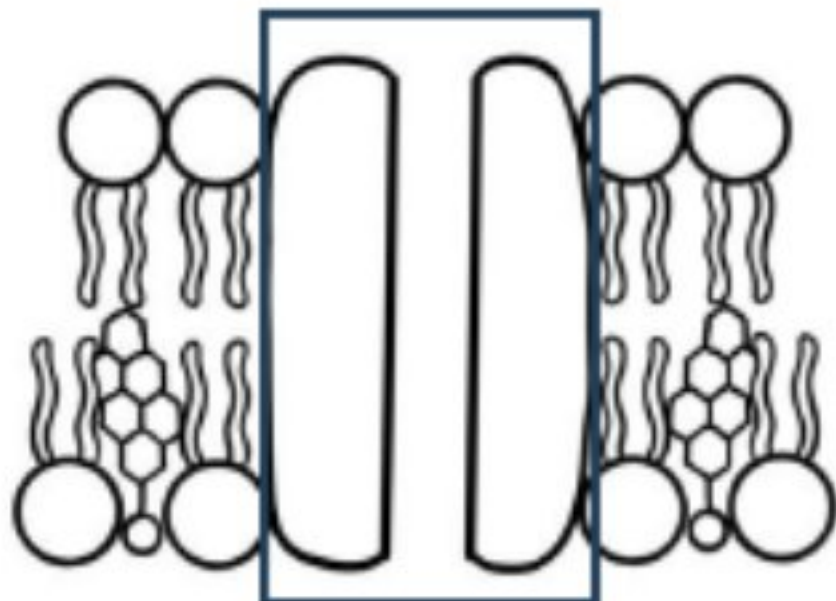


**BAHAGIAN A**  
**SECTION A**

**SOALAN 1/ QUESTION 1**

| <b>NO.<br/>SOALAN/<br/>QUESTION</b> |         | <b>CADANGAN JAWAPAN<br/>SUGGESTED ANSWER</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>MARKAH<br/>MARKS</b>              |   |
|-------------------------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|---|
| S1                                  | (a)(i)  | P : Xerofit/ <i>Xerophyte</i><br>Q : Hidrofit/ <i>Hydrophyte</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1<br>1                               | 2 |
|                                     | (a)(ii) | <ul style="list-style-type: none"> <li>• Daun berduri/ berduri shj<br/><i>Thorny/ spiny leaf (accept: leaf modified into thorn)</i></li> <li>• Melindungi tumbuhan (daripada menjadi makanan)<br/><i>Protect plants (from becoming food)</i></li> <li>• Mengurangkan jumlah luas permukaan<br/><i>Reduce total surface area</i></li> <li>• Mengurangkan kehilangan air/ kadar transpirasi<br/><i>Reduce water loss/ rate of transpiration</i></li> <li>• Mengumpul embun/ wap air (utk mendapatkan bekalan air)<br/><i>Accumulate dew/ water vapour (to get water supply)</i></li> <li>• Daun sukulen<br/><i>Succulent leaves</i></li> <li>• Untuk menyimpan air/ kadar transpirasi<br/><i>To store water/ rate of transpiration</i></li> <li>• Mengurangkan kehilangan air/ kadar transpirasi<br/><i>Reduce water loss/ rate of transpiration</i></li> </ul> | 1<br>1<br>1<br>1<br>1<br>1<br>1<br>1 | 2 |
|                                     | (b)(i)  | Paya (bakau)/ muara sungai/ tempat pertemuan air masin dan tawar<br><i>(Mangrove) swamps/ river mouth/ estuary/ meeting point of seawater and freshwater</i><br><i>(Reject: Kalau ada pelajar tulis pesisir pantai)</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1                                    | 1 |
|                                     | (b)(ii) | <ul style="list-style-type: none"> <li>• Lentisel pada akar akan tersumbat/ dilitupi minyak<br/><i>Lenticels on the root clog up/ covered by oil</i></li> <li>• Kurang/ tidak mendapat bekalan oksigen/ oksigen diserap<br/><i>Less/ No oxygen supply/ less oxygen absorbed</i></li> <li>• Respirasi sel kurang/ tidak berlaku// kurang/ tidak berlaku pertukaran gas<br/><i>Less/ No cellular respiration// less/ no gaseous exchange</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                         | 1<br>1<br>1                          | 1 |
| <b>JUMLAH<br/>TOTAL</b>             |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>6M</b>                            |   |

**SOALAN 2/ QUESTION 2**

| NO.<br>SOALAN/<br>QUESTION |     | CADANGAN JAWAPAN<br>SUGGESTED ANSWER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | MARKAH<br>MARKS |   |
|----------------------------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---|
| S2                         | (a) | Glikolipid / glycolipid/ rantai karbohidrat                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1               | 1 |
|                            | (b) |  <p>Nota:<br/>Rajah yang betul, liang terbuka dengan saiz yang sama<br/><i>Correct diagram, open channel with similar size</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1               | 1 |
|                            | (c) | <ul style="list-style-type: none"> <li>Kepala berkutub/ hidrofilik/ larut – air/ bercas<br/><i>Polar/ hydrophilic/ water soluble/ charged head</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1               | 2 |
|                            |     | <ul style="list-style-type: none"> <li>Ekor tidak berkutub/ hidrofobik/ larut lemak/ tidak bercas<br/><i>Non-polar/ hydrophobic/ fat soluble/ uncharged/ tail</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1               |   |
|                            | (d) | <ul style="list-style-type: none"> <li>(Minuman penghidratan semula) mengandungi garam/ elektrolit<br/><i>(Rehydration drinks) contains salt/ electrolytes</i></li> <li>Mengembalikan/ mengganti <b>kehilangan</b> air/ elektrolit (dalam individu mengalami cirit-birit)// Meningkatkan air ke paras normal// Isotonik kepada plasma darah/ sel manusia<br/><i>Recover/ Replace loss of water/ electrolytes (in individuals with diarrhoea)// Increase water to normal level/ Isotonic to blood plasma/ human cells</i></li> <li>Rehidrasi/ hidrasi/ penghidratan semula/ tekanan osmosis darah kembali normal<br/><i>Rehydration/ hydrate/ blood osmosis pressure back to normal</i></li> </ul> | 1<br>1<br>1     | 2 |
| Jumlah<br>TOTAL            |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 6M              |   |

**SOALAN 3/ QUESTION 3**

| <b>NO.<br/>SOALAN/<br/>QUESTION</b> |         | <b>CADANGAN JAWAPAN<br/>SUGGESTED ANSWER</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>MARKAH<br/>MARKS</b> |   |
|-------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|---|
| S3                                  | (a)(i)  | J : Kondensasi / <i>Condensation</i><br>K : Hidrolisis / <i>Hydrolysis</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1<br>1                  | 2 |
|                                     | (a)(ii) | Galaktosa + Glukosa → Laktosa + air<br><i>Galactose + Glucose → Lactose + water</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1                       | 1 |
|                                     | (b)     | Susu/ keju/ mana-mana hasil tenusu yang sesuai<br><i>Milk/ cheese/ any suitable dairy product</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1                       | 1 |
|                                     | (c)     | (Kitin) terurai/ mereput selepas luka yang dijahit sembuh// bahan biodegradasi// hidrolisis (oleh air)// terurai oleh enzim pencernaan// tidak toksik/ tidak menyebabkan alahan<br><i>(Chitin) decompose after the sewn wound heals// biodegradable substance// hydrolyse (by water)// broken down by enzymatic digestion// non-toxic/ non-allergenic</i>                                                                                                                                                                                                                                                                         | 1                       | 1 |
|                                     | (d)     | <ul style="list-style-type: none"> <li>Bentuk sel tumbuhan tidak dapat dikekalkan<br/><i>The shape of plant cells cannot be maintained</i></li> <li>Sel tumbuhan tidak mendapat sokongan mekanikal<br/><i>Plant cells do not obtain mechanical support</i></li> <li>Sel tumbuhan mudah pecah// Dinding sel ranap/ rapuh/ lemah lembik/ tidak kuat/ tidak tegar<br/><i>Plant cells easily burst// Cell walls collapse/ fragile/ weak/ soft</i></li> <li>Tekanan segah tidak boleh dikekalkan// tidak dapat menahan tekanan osmosis<br/><i>Turgor pressure cannot be maintained// cannot withstand osmotic pressure.</i></li> </ul> | 1<br><br>1<br>1<br>1    | 2 |
| <b>JUMLAH<br/>TOTAL</b>             |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>7M</b>               |   |

**SOALAN 4/ QUESTION 4**

| NO.<br>SOALAN/<br>QUESTION                                                      |                     | CADANGAN JAWAPAN<br>SUGGESTED ANSWER                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                         |   | MARKAH<br>MARKS |   |
|---------------------------------------------------------------------------------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|---|-----------------|---|
| S4                                                                              | (a)(i)              | M : Fermentasi alkohol (reject: tanpa perkataan fermentasi)<br><i>Alcohol fermentation</i><br><br>N : Fermentasi asid laktik<br><i>Lactic acid fermentation</i>                                                                                                                                                                                                                                                                                                                                        |                                                                                         |   | 1<br><br>1      | 2 |
|                                                                                 | (a)(ii)             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                         |   |                 |   |
|                                                                                 |                     | M                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Kriteria<br><i>Criteria</i>                                                             | N |                 |   |
| Etanol dan karbon dioksida// tenaga<br><i>Ethanol, carbon dioxide, (energy)</i> |                     | Hasil fermentasi<br><i>Fermentation products</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Asid laktik// tenaga<br><i>Lactic acid, (energy)</i>                                    | 1 |                 |   |
|                                                                                 | Yis<br><i>Yeast</i> | Mikroorganisma terlibat<br><i>microoragnism involved</i>                                                                                                                                                                                                                                                                                                                                                                                                                                               | Bakteria /<br><i>Lactobacillus sp.</i><br><i>Bacteria /</i><br><i>Lactobacillus sp.</i> | 1 | 2               |   |
|                                                                                 | (b)                 | <ul style="list-style-type: none"><li>(Dalam suhu bilik), bakteria lain/ mikroorganisma/ kulat terus membiak dengan cepat/ lebih aktif/ merangsangkan pertumbuhan mikroorganisma/ bakteria.<br/><i>(At room temperature), other bacterial microorganism/ mold reproduce faster/ more active/ stimulate the growth of microorganism/ bacteria</i></li><li>Penguraian/ pengoksidaan gula susu/ laktosa terus berlaku<br/><i>Breakdown/ oxidation of milk/ lactose sugar continue to happen</i></li></ul> |                                                                                         |   | 1<br><br>1      | 1 |

|                     |                                                                                                                                                                                                                                                                                                                                            |           |   |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---|
| (c)                 | <ul style="list-style-type: none"> <li>Tumbuhan akan layu/ mati<br/><i>Plant will wilt/ die</i></li> </ul>                                                                                                                                                                                                                                 | 1         | 2 |
|                     | <ul style="list-style-type: none"> <li>(Sel) di akar tumbuhan kurang/ tidak mendapat oksigen// respirasi aerobik kurang/ tidak berlaku.<br/><i>Cells in the roots of the plant obtain limited/ less/ no oxygen// aerobic respiration less/ does not occur</i></li> </ul>                                                                   | 1         |   |
|                     | <ul style="list-style-type: none"> <li>(Sel) akar akan menjalankan fermentasi alkohol<br/><i>Root cell will carry out alcoholic fermentation</i></li> </ul>                                                                                                                                                                                | 1         |   |
|                     | <ul style="list-style-type: none"> <li>Alkohol/ etanol akan terkumpul di dalam sel<br/><i>Alcohol/ ethanol will accumulate in the cells</i></li> </ul>                                                                                                                                                                                     | 1         |   |
|                     | <ul style="list-style-type: none"> <li>Alkohol/ etanol adalah toksik kepada sel tumbuhan// akar tumbuhan tidak menghasilkan enzim alkohol dehidrogenase<br/><i>Alcohol/ ethanol is toxic to the plant cells/ plant roots does not produce alcohol dehydrogenase enzyme</i></li> </ul>                                                      | 1         |   |
|                     | <ul style="list-style-type: none"> <li>(Sel) akar tidak mempunyai toleransi terhadap alkohol// (molekul) alkohol/ etanol tidak diuraikan kepada karbon dioksida (yang tidak toksik)<br/><i>Root cells do not have tolerance toward alcohol// alcohol/ ethanol (molecule) does not breakdown into (non-toxic) carbon dioxide</i></li> </ul> | 1         |   |
| <b>JUMLAH TOTAL</b> |                                                                                                                                                                                                                                                                                                                                            | <b>7M</b> |   |

#### SOALAN 5/ QUESTION 5

| NO.<br>SOALAN/<br>QUESTION | CADANGAN JAWAPAN<br>SUGGESTED ANSWER                                                                                                                                                                                                                                  | MARKAH<br>MARKS |   |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---|
| (a) (i)                    | P : Tilakoid<br><i>Thylakoid</i>                                                                                                                                                                                                                                      | 1               | 2 |
|                            | Q : Stroma<br><i>Stroma</i>                                                                                                                                                                                                                                           | 1               |   |
| (a) (ii)                   | NADPH// ATP                                                                                                                                                                                                                                                           | 1               | 1 |
| (b)                        | <ul style="list-style-type: none"> <li>Tindak balas bersandarkan cahaya/ di P tidak berlaku<br/><i>Light dependent reaction/ at P does not occur</i></li> </ul>                                                                                                       | 1               | 3 |
|                            | <ul style="list-style-type: none"> <li>Elektron tidak teruja<br/><i>Electrons are not excited</i></li> </ul>                                                                                                                                                          | 1               |   |
|                            | <ul style="list-style-type: none"> <li>ATP/ tenaga tidak terbentuk<br/><i>ATP/ energy is not formed</i></li> </ul>                                                                                                                                                    | 1               |   |
|                            | <ul style="list-style-type: none"> <li>Fotolisis air tidak berlaku// Pembentukan ion hidrogen/ <math>H^+</math>/ ion hidroksida/ <math>OH^-</math> tidak berlaku<br/><i>Photolysis of water does not occur// hydrogen ion/ <math>H^+</math>/ hydroxide</i></li> </ul> | 1               |   |

|                                                                                                                                                                                        |                                                                                                                                                                                      | <p><i>ion/ OH<sup>-</sup> does not form</i></p> <ul style="list-style-type: none"><li>• NADPH tidak terbentuk/ NADP<sup>+</sup> tidak bergabung dengan H<sup>+</sup><br/><i>NADPH is not formed/ NADP<sup>+</sup> does not combine with H<sup>+</sup></i></li><li>• Tiada pembentukan gas oksigen/ air<br/><i>No formation of oxygen gas/ water</i></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1  |   |                                                                                                                                  |                                                                                                                                |                                                                                                              |                                                                                                                 |                                                                                                                                                                                        |                                                                                                                                                                                      |                                                                                                |                                                                                              |                              |   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---|----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------------------------------|---|
|                                                                                                                                                                                        |                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1  |   |                                                                                                                                  |                                                                                                                                |                                                                                                              |                                                                                                                 |                                                                                                                                                                                        |                                                                                                                                                                                      |                                                                                                |                                                                                              |                              |   |
|                                                                                                                                                                                        | (c)                                                                                                                                                                                  | <b>Beza R dan S</b> <table><tr><th>R</th><th>S</th></tr><tr><td>Penyerapan/ pengambilan karbon dioksida daripada persekitaran meningkat<br/><i>Absorption/ uptake of carbon dioxide increases</i></td><td>Penyerapan/ pengambilan karbon dioksida daripada persekitaran menurun<br/><i>Absorption/ uptake of carbon dioxide decreases</i></td></tr><tr><td>Kadar fotosintesis melebihi kadar respirasi<br/><i>Rate of photosynthesis higher than rate of respiration</i></td><td>Kadar respirasi melebihi kadar fotosintesis<br/><i>Rate of respiration is faster than rate of photosynthesis</i></td></tr><tr><td>Untung bersih dalam glukosa// Kadar penghasilan glukosa melebihi kadar penggunaan glukosa<br/><i>Net gain in glucose// Rate of glucose production exceeds the rate of glucose usage</i></td><td>Rugi bersih dalam glukosa// Kadar penggunaan glukosa melebihi kadar penghasilan glukosa<br/><i>Net loss in glucose// Rate of glucose usage exceeds the rate of glucose production</i></td></tr><tr><td>Penghasilan bunga/ buah/ biji/ meningkat<br/><i>Production of flower/ fruit/ seeds increase</i></td><td>Penghasilan bunga/ buah/ biji/ menurun<br/><i>Production of flower/ fruit/ seeds decrease</i></td></tr></table> | R  | S | Penyerapan/ pengambilan karbon dioksida daripada persekitaran meningkat<br><i>Absorption/ uptake of carbon dioxide increases</i> | Penyerapan/ pengambilan karbon dioksida daripada persekitaran menurun<br><i>Absorption/ uptake of carbon dioxide decreases</i> | Kadar fotosintesis melebihi kadar respirasi<br><i>Rate of photosynthesis higher than rate of respiration</i> | Kadar respirasi melebihi kadar fotosintesis<br><i>Rate of respiration is faster than rate of photosynthesis</i> | Untung bersih dalam glukosa// Kadar penghasilan glukosa melebihi kadar penggunaan glukosa<br><i>Net gain in glucose// Rate of glucose production exceeds the rate of glucose usage</i> | Rugi bersih dalam glukosa// Kadar penggunaan glukosa melebihi kadar penghasilan glukosa<br><i>Net loss in glucose// Rate of glucose usage exceeds the rate of glucose production</i> | Penghasilan bunga/ buah/ biji/ meningkat<br><i>Production of flower/ fruit/ seeds increase</i> | Penghasilan bunga/ buah/ biji/ menurun<br><i>Production of flower/ fruit/ seeds decrease</i> | 1<br><br>1<br><br>1<br><br>1 | 2 |
| R                                                                                                                                                                                      | S                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |    |   |                                                                                                                                  |                                                                                                                                |                                                                                                              |                                                                                                                 |                                                                                                                                                                                        |                                                                                                                                                                                      |                                                                                                |                                                                                              |                              |   |
| Penyerapan/ pengambilan karbon dioksida daripada persekitaran meningkat<br><i>Absorption/ uptake of carbon dioxide increases</i>                                                       | Penyerapan/ pengambilan karbon dioksida daripada persekitaran menurun<br><i>Absorption/ uptake of carbon dioxide decreases</i>                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |    |   |                                                                                                                                  |                                                                                                                                |                                                                                                              |                                                                                                                 |                                                                                                                                                                                        |                                                                                                                                                                                      |                                                                                                |                                                                                              |                              |   |
| Kadar fotosintesis melebihi kadar respirasi<br><i>Rate of photosynthesis higher than rate of respiration</i>                                                                           | Kadar respirasi melebihi kadar fotosintesis<br><i>Rate of respiration is faster than rate of photosynthesis</i>                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |    |   |                                                                                                                                  |                                                                                                                                |                                                                                                              |                                                                                                                 |                                                                                                                                                                                        |                                                                                                                                                                                      |                                                                                                |                                                                                              |                              |   |
| Untung bersih dalam glukosa// Kadar penghasilan glukosa melebihi kadar penggunaan glukosa<br><i>Net gain in glucose// Rate of glucose production exceeds the rate of glucose usage</i> | Rugi bersih dalam glukosa// Kadar penggunaan glukosa melebihi kadar penghasilan glukosa<br><i>Net loss in glucose// Rate of glucose usage exceeds the rate of glucose production</i> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |    |   |                                                                                                                                  |                                                                                                                                |                                                                                                              |                                                                                                                 |                                                                                                                                                                                        |                                                                                                                                                                                      |                                                                                                |                                                                                              |                              |   |
| Penghasilan bunga/ buah/ biji/ meningkat<br><i>Production of flower/ fruit/ seeds increase</i>                                                                                         | Penghasilan bunga/ buah/ biji/ menurun<br><i>Production of flower/ fruit/ seeds decrease</i>                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |    |   |                                                                                                                                  |                                                                                                                                |                                                                                                              |                                                                                                                 |                                                                                                                                                                                        |                                                                                                                                                                                      |                                                                                                |                                                                                              |                              |   |
| Jumlah<br>TOTAL                                                                                                                                                                        |                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 8M |   |                                                                                                                                  |                                                                                                                                |                                                                                                              |                                                                                                                 |                                                                                                                                                                                        |                                                                                                                                                                                      |                                                                                                |                                                                                              |                              |   |

#### SOALAN 6/ QUESTION 6

| NO. SOALAN/<br>QUESTION | CADANGAN JAWAPAN<br>SUGGESTED ANSWER                                                                                                                          | MARKAH<br>MARKS            |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| S6                      | <p>(a)</p> <p>Struktur L : Folikel graaf<br/><i>Structure L: Graafian follicle</i></p> <p>Struktur M: Korpus luteum<br/><i>Structure M: Corpus luteum</i></p> | <p>1</p> <p>1</p> <p>2</p> |

|                                                                                                                                                                            | (b)                                                                                                                                                                                        | Merangsang perkembangan folikel (di dalam ovari)// Merangsang perembesan estrogen<br><i>Stimulates follicle (growth in the ovary)// Stimulates the release of oestrogen</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1                                     | 1                |                                        |                                                            |                                                                                                                           |                                                                                                                         |                                                                                          |                                                                              |                                                                                           |                                                                                    |                                                                                                                                                                            |                                                                                                                                                                                            |                                                         |                                                                                               |                                       |   |
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|                                                                                                                                                                            | (c)                                                                                                                                                                                        | <ul style="list-style-type: none"><li>Endometrium akan luruh// haid berlaku<br/><i>Endometrium will shed// menstruation occurs</i></li><li>Ovulasi tidak berlaku<br/><i>Ovulation does not occur</i></li><li>Korpus luteum tidak terbentuk<br/><i>Corpus luteum failed to form</i></li><li>Rembesan progesteron rendah/ tiada<br/><i>Secretion of progesterone low</i></li><li>Endometrium tidak tebal/ penebalan berkurang<br/><i>Endometrium is not thickened/ thickness decreases</i></li><li>Kurang salur darah dihasilkan<br/><i>Less blood vessel produced</i></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1<br><br>1<br><br>1<br><br>1<br><br>1 | 3                |                                        |                                                            |                                                                                                                           |                                                                                                                         |                                                                                          |                                                                              |                                                                                           |                                                                                    |                                                                                                                                                                            |                                                                                                                                                                                            |                                                         |                                                                                               |                                       |   |
|                                                                                                                                                                            | (d)                                                                                                                                                                                        | <table><tr><th>Kembar S/ Twin S</th><th>Kembar T/ Twin T</th></tr><tr><td>Kembar seiras<br/><i>Identical twin</i></td><td>Kembar tak seiras (reject: tidak)<br/><i>Fraternal twin</i></td></tr><tr><td>Melibatkan satu sperma dan satu ovum// membentuk satu zigot<br/><i>Involve one sperm and one ovum// forming one zygote</i></td><td>Melibatkan dua sperma dan dua ovum// membentuk dua zigot<br/><i>Involve two sperms and two ova// forming two zygotes</i></td></tr><tr><td>Embrio membahagi menjadi dua dengan lengkap<br/><i>Embryo divides into two completely</i></td><td>Embrio tidak membahagi menjadi dua<br/><i>Embryo does not divide into two</i></td></tr><tr><td>Satu plasenta dikongsi oleh dua fetus<br/><i>One placenta is shared between two foetus</i></td><td>Setiap fetus mempunyai plasenta sendiri<br/><i>Each foetus has its own placenta</i></td></tr><tr><td>Kandungan genetik/ sifat fizikal kembar adalah sama/ jenis rambut yang sama<br/><i>The genetic content/ physical appearances of these twins are similar/ same hair type</i></td><td>Kandungan genetik/ sifat fizikal kembar adalah tidak sama/ jenis rambut yang berbeza<br/><i>The genetic content/ physical appearances of these twins are different/ different hair type</i></td></tr><tr><td>Jantina sama<br/><i>Gender of both twins is the same</i></td><td>Jantina mungkin sama atau berbeza<br/><i>Gender of both twins may be the same or different</i></td></tr></table> | Kembar S/ Twin S                      | Kembar T/ Twin T | Kembar seiras<br><i>Identical twin</i> | Kembar tak seiras (reject: tidak)<br><i>Fraternal twin</i> | Melibatkan satu sperma dan satu ovum// membentuk satu zigot<br><i>Involve one sperm and one ovum// forming one zygote</i> | Melibatkan dua sperma dan dua ovum// membentuk dua zigot<br><i>Involve two sperms and two ova// forming two zygotes</i> | Embrio membahagi menjadi dua dengan lengkap<br><i>Embryo divides into two completely</i> | Embrio tidak membahagi menjadi dua<br><i>Embryo does not divide into two</i> | Satu plasenta dikongsi oleh dua fetus<br><i>One placenta is shared between two foetus</i> | Setiap fetus mempunyai plasenta sendiri<br><i>Each foetus has its own placenta</i> | Kandungan genetik/ sifat fizikal kembar adalah sama/ jenis rambut yang sama<br><i>The genetic content/ physical appearances of these twins are similar/ same hair type</i> | Kandungan genetik/ sifat fizikal kembar adalah tidak sama/ jenis rambut yang berbeza<br><i>The genetic content/ physical appearances of these twins are different/ different hair type</i> | Jantina sama<br><i>Gender of both twins is the same</i> | Jantina mungkin sama atau berbeza<br><i>Gender of both twins may be the same or different</i> | 1<br><br>1<br><br>1<br><br>1<br><br>1 | 2 |
| Kembar S/ Twin S                                                                                                                                                           | Kembar T/ Twin T                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                       |                  |                                        |                                                            |                                                                                                                           |                                                                                                                         |                                                                                          |                                                                              |                                                                                           |                                                                                    |                                                                                                                                                                            |                                                                                                                                                                                            |                                                         |                                                                                               |                                       |   |
| Kembar seiras<br><i>Identical twin</i>                                                                                                                                     | Kembar tak seiras (reject: tidak)<br><i>Fraternal twin</i>                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                       |                  |                                        |                                                            |                                                                                                                           |                                                                                                                         |                                                                                          |                                                                              |                                                                                           |                                                                                    |                                                                                                                                                                            |                                                                                                                                                                                            |                                                         |                                                                                               |                                       |   |
| Melibatkan satu sperma dan satu ovum// membentuk satu zigot<br><i>Involve one sperm and one ovum// forming one zygote</i>                                                  | Melibatkan dua sperma dan dua ovum// membentuk dua zigot<br><i>Involve two sperms and two ova// forming two zygotes</i>                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                       |                  |                                        |                                                            |                                                                                                                           |                                                                                                                         |                                                                                          |                                                                              |                                                                                           |                                                                                    |                                                                                                                                                                            |                                                                                                                                                                                            |                                                         |                                                                                               |                                       |   |
| Embrio membahagi menjadi dua dengan lengkap<br><i>Embryo divides into two completely</i>                                                                                   | Embrio tidak membahagi menjadi dua<br><i>Embryo does not divide into two</i>                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                       |                  |                                        |                                                            |                                                                                                                           |                                                                                                                         |                                                                                          |                                                                              |                                                                                           |                                                                                    |                                                                                                                                                                            |                                                                                                                                                                                            |                                                         |                                                                                               |                                       |   |
| Satu plasenta dikongsi oleh dua fetus<br><i>One placenta is shared between two foetus</i>                                                                                  | Setiap fetus mempunyai plasenta sendiri<br><i>Each foetus has its own placenta</i>                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                       |                  |                                        |                                                            |                                                                                                                           |                                                                                                                         |                                                                                          |                                                                              |                                                                                           |                                                                                    |                                                                                                                                                                            |                                                                                                                                                                                            |                                                         |                                                                                               |                                       |   |
| Kandungan genetik/ sifat fizikal kembar adalah sama/ jenis rambut yang sama<br><i>The genetic content/ physical appearances of these twins are similar/ same hair type</i> | Kandungan genetik/ sifat fizikal kembar adalah tidak sama/ jenis rambut yang berbeza<br><i>The genetic content/ physical appearances of these twins are different/ different hair type</i> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                       |                  |                                        |                                                            |                                                                                                                           |                                                                                                                         |                                                                                          |                                                                              |                                                                                           |                                                                                    |                                                                                                                                                                            |                                                                                                                                                                                            |                                                         |                                                                                               |                                       |   |
| Jantina sama<br><i>Gender of both twins is the same</i>                                                                                                                    | Jantina mungkin sama atau berbeza<br><i>Gender of both twins may be the same or different</i>                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                       |                  |                                        |                                                            |                                                                                                                           |                                                                                                                         |                                                                                          |                                                                              |                                                                                           |                                                                                    |                                                                                                                                                                            |                                                                                                                                                                                            |                                                         |                                                                                               |                                       |   |
|                                                                                                                                                                            |                                                                                                                                                                                            | JUMLAH TOTAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 8M                                    |                  |                                        |                                                            |                                                                                                                           |                                                                                                                         |                                                                                          |                                                                              |                                                                                           |                                                                                    |                                                                                                                                                                            |                                                                                                                                                                                            |                                                         |                                                                                               |                                       |   |

### SOALAN 7/ QUESTION 7

| NO.<br>SOALAN /<br>QUESTION |          | CADANGAN JAWAPAN<br>SUGGESTED ANSWER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | MARKAH<br>MARKS                       |   |
|-----------------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---|
| S7                          | (a)      | Plasmid rekombinan<br><i>Recombinant plasmid</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1                                     | 1 |
|                             | (a)(ii)  | (Plasmid) mengandungi gen insulin (manusia)// mengandungi DNA bakteria<br><i>(Plasmid) contains human insulin gene// contains bacterial DNA</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1                                     | 1 |
|                             | (a)(iii) | (Enzim) DNA ligase<br><i>DNA ligase (enzyme)</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1                                     | 1 |
|                             | (b)      | <ul style="list-style-type: none"> <li>• Pemprofilan DNA// Cap jari DNA<br/><i>DNA Profiling// DNA Fingerprinting</i></li> <li>• Ambil sampel darah/ air mani/ kulit/ (folikel) rambut/ air liur dari Individu Q<br/><i>Blood/ semen/ skin/ hair (follicle)/ saliva sample from individual Q is extracted</i></li> <li>• Terima apa-apa yang boleh digunakan untuk DNA profiling</li> <li>• Ambil sampel darah/ air mani/ kulit/ folikel rambut dari Encik R<br/><i>Blood/ semen/ skin/ hair follicle sample from Mr. R</i></li> <li>• Ambil sampel darah/ kulit/ folikel rambut dari ibu kandung Individu Q<br/><i>Blood/ skin/ hair follicle sample from biological mother of individual Q is extracted</i></li> <li>• Jika kedudukan jalur DNA dalam profil DNA individu Q sama dengan jalur DNA Encik R (dan ibu kandungnya)<br/><i>If position of DNA bands in DNA profile of individual Q is similar to DNA bands of Mr. R (and his biological mother)</i></li> <li>• Maka terbukti Individu Q adalah anak kandung Encik R// sebaliknya<br/><i>So it's confirmed individual Q is biological son of Mr. R// vice versa</i></li> <li>• Accept: Any detail steps of procedure</li> </ul> | 1<br><br>1<br><br>1<br><br>1<br><br>1 | 3 |

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|---------------------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----------|--|
|                     | (c) | <ul style="list-style-type: none"> <li>• Penghasilan tanaman (transgenik) yang berkualiti tinggi<br/><i>Producing high quality (transgenic) crops</i></li> <li>• Meningkatkan kandungan nutrisi tanaman<br/><i>Increase nutritional value of crop</i></li> <li>• Mengurangkan penggunaan pestisid// Mengurangkan masalah serangga (perosak)/ penyakit<br/><i>Reduce usage of pesticides// Reduce problems of crops related to pests/ diseases</i></li> <li>• Mudah didapati// Mengatasi masalah bekalan makanan// Keterjaminan makanan<br/><i>Increase availability// prevent food shortage// food security</i></li> <li>• Hasil yang banyak menyebabkan harga makanan lebih murah/ mengurangkan kos penghasilan makanan<br/><i>Increase in food production will reduce the food price/ reduce cost of food productions</i></li> <li>• Pendapatan petani meningkat/ meningkatkan ekonomi negara<br/><i>(Tolak: meningkatkan hasil tanaman)</i><br/><i>Increase farmer's income/ increase country's economic revenue</i><br/><br/><i>(Reject: increase crop yields)</i></li> </ul> | 1 |           |  |
|                     |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1 |           |  |
|                     |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1 |           |  |
|                     |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1 | 3         |  |
|                     |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1 |           |  |
|                     |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1 |           |  |
| <b>JUMLAH TOTAL</b> |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |   | <b>9M</b> |  |

#### SOALAN 8/ QUESTION 8

| NO.<br>SOALAN/<br>QUESTION |     | CADANGAN JAWAPAN<br>SUGGESTED ANSWER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | MARKAH<br>MARKS                                                                                                                                                                                                                                                                                                                                                                                                                                                          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| S8                         | (a) | <ul style="list-style-type: none"><li>• (Kerosakan mikrovilus) mengurangkan luas permukaan<br/><i>(Damaged microvillus) reduced surface area</i></li><li>• Mengurangkan kadar penyerapan nutrien<br/><i>Reduce the rate of nutrient absorption</i></li><li>• (Kerosakan sel goblet menyebabkan) kurang / tiada rembesan mukus<br/><i>(Damaged goblet cells cause) less / no mucus secretion</i></li><li>• Proses penyerapan / pencernaan semakin perlahan<br/><i>Absorption/ digestion process become slow</i></li></ul> | 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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|     | <p>Pemecahan makanan secara mekanikal untuk membentuk butiran yang kecil<br/><i>The mechanical breakdown of food to form small particles</i></p> <p>P1 Proses penguraian molekul kompleks menjadi molekul ringkas<br/><i>The decomposition process of complex/ (accept: large insoluble) molecules into simple/ (accept: small soluble) molecules</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1                                     | 2 |
|     | <p>P2 Melibatkan pengunyahan/ peristalsis<br/><i>Involves chewing/ peristalsis</i><br/>(Accept: churning action of stomach/ emulsification of fats)</p> <p>Melibatkan tindakan enzim<br/><i>Involves enzyme reaction</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1                                     |   |
| (c) | <p><b>Persamaan:</b></p> <p>Kedua-dua menu mengandungi karbohidrat/ lemak/ protein/ serat/ natrium</p> <p><b>Perbezaan:</b></p> <ul style="list-style-type: none"> <li>Kandungan protein dalam Menu Y lebih tinggi daripada Menu Z // vice versa<br/><i>Protein content in Menu Y is higher compared to Menu Z // vice versa</i></li> <li>Kandungan karbohidrat dalam Menu Y lebih tinggi daripada Menu Z // vice versa<br/><i>Carbohydrate content in Menu Y is higher compared to Menu Z // vice versa</i></li> <li>Kandungan lemak dalam Menu Y lebih tinggi daripada Menu Z // vice versa<br/><i>Fat content in Menu Y is higher compared to Menu Z // vice versa</i></li> <li>Kandungan natrium dalam Menu Y lebih tinggi daripada Menu Z // vice versa<br/><i>Sodium content in Menu Y is higher compared to Menu Z // vice versa</i></li> <li>Kandungan serat dalam Menu Z lebih tinggi daripada Menu Y // vice versa<br/><i>Fibre content in Menu Z is higher compared to Menu Y // vice versa</i></li> </ul> | 1<br><br>1<br><br>1<br><br>1<br><br>1 | 2 |
| (d) | <ul style="list-style-type: none"> <li>Makan pada masa yang betul/ sama<br/><i>Eat at regular/ same hours</i></li> <li>Makan dalam kuantiti yang betul/ sama// makanan seimbang</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1                                     | 2 |

|                     |  |                                                                                                                                                                                                                                                                                                                         |           |  |
|---------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--|
|                     |  | <i>Eat in right/ regular portion// balance diet</i>                                                                                                                                                                                                                                                                     | 1         |  |
|                     |  | <ul style="list-style-type: none"> <li>• Elak pengambilan alkohol<br/><i>Avoid taking alcohol</i></li> </ul>                                                                                                                                                                                                            | 1         |  |
|                     |  | <ul style="list-style-type: none"> <li>• Elak pengambilan ubat penahan sakit yang berlebihan//hanya mengambil ubat yang dipreskripsi oleh Doktor// pemeriksaan kesihatan secara berkala<br/><i>Avoid excessive intake of painkillers/ only take prescribed medicines by doctor/ regular medical check up</i></li> </ul> | 1         |  |
|                     |  | <ul style="list-style-type: none"> <li>• Menguruskan tekanan dengan meditasi/ pernafasan dalaman/ mengurangkan stres/ tekanan// senaman berkala<br/><i>Able to manage stress by meditation/ deep breathing/ reduce stress// exercise regularly</i></li> </ul>                                                           | 1         |  |
|                     |  | <ul style="list-style-type: none"> <li>• Mengelakkan minuman berkafein/ kopi/ teh/ jus yang berasid// makanan pedas<br/><i>Avoid caffeinated drink/ coffee/ tea/ highly acidic juices/ spicy food</i></li> </ul>                                                                                                        | 1         |  |
| <b>JUMLAH TOTAL</b> |  |                                                                                                                                                                                                                                                                                                                         | <b>9M</b> |  |

**BAHAGIAN B**  
**SECTION B**

**SOALAN 9/ QUESTION 9**

| <b>NO. SOALAN/<br/>QUESTION</b> |     | <b>CADANGAN JAWAPAN<br/>SUGGESTED ANSWER</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>MARKAH<br/>MARKS</b>                   |   |
|---------------------------------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|---|
| S9                              | (a) | <p>Jawapan untuk C1 – Mutasi gen (minimum satu)<br/><i>Gene mutation</i></p> <p>Jawapan untuk C2 – Mutasi kromosom (minimum satu)<br/><i>Chromosomal mutation</i></p> <p><b>C1</b></p> <ul style="list-style-type: none"> <li>• Perubahan dalam urutan bes nukleotida/ bernitrogen (dalam satu gen) // Berlaku melalui penggantian bes/ pelenyapan bes/ sisipan bes<br/><i>Change in nucleotide/ nitrogenous base sequence (of a gene)// Occurs by base substitution / base deletion / base insertion</i></li> <li>• Mengubah kod genetik bagi sintesis asid amino<br/><i>Change the genetic code that is used to synthesise amino acid</i></li> <li>• Mengubah struktur protein yang dihasilkan / disintesis<br/><i>Change in protein structure produced / synthesised</i></li> </ul> | 1<br><br>1<br><br><br>1<br><br>1<br><br>1 | 2 |

|  |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                       |  |
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|  |        | <ul style="list-style-type: none"> <li>Terima mana-mana penyakit yang disebabkan oleh mutasi gen (contoh anemia sel sabit/ albinisme/ talasemia/ sistik fibrosis/ hemofilia)<br/><i>Accept any diseases caused by gene mutation (example sickle cell anaemia/ albinisme/ thalasemia/ cystic fibrosis/ haemophilia)</i></li> </ul> <p><b>C2</b></p> <ul style="list-style-type: none"> <li>Perubahan struktur / bilangan kromosom<br/><i>Changes to chromosomal structure / number</i></li> <li>(Perubahan struktur kromosom) melibatkan perubahan dalam susunan gen pada suatu kromosom// Melibatkan pelenyapan/ penggandaan/ penyongsangan/ translokasi// menyebabkan keabnormalan kromosom/ aberasi kromosom<br/><i>(Changes in chromosomal structure) involve changes to the gene sequence in a chromosome// change in chromosomal structure// Involve deletion/ duplication/ inversion/ translocation// causes abnormality to the chromosome/ chromosomal aberration</i></li> <li>(Perubahan bilangan kromosom) menyebabkan organisma diploid kehilangan satu atau lebih kromosom / memperoleh satu atau lebih kromosom tambahan // tak disjungsi berlaku<br/><i>(change in chromosomal number) causes a diploid organism to lose one or more chromosomes / gain one or more chromosomes // nondisjunction occur</i></li> <li>Terima mana-mana contoh penyakit yang disebabkan oleh mutasi kromosom (contoh Sindrom Down, Sindrom Klinefelter, Sindrom Turner, Sindrom Jacob, Sindrom Cri du chat)<br/><i>Accept any diseases caused by chromosomal mutation (example Down Syndrome, Klinefelter Syndrome, Turner Syndrome, Jacob Syndrome, Cri du chat Syndrome)</i></li> </ul> | 1                     |  |
|  | (b)(i) | <ul style="list-style-type: none"> <li>Adenina/ A diganti dengan timina/ T<br/><i>Adenine/ A is replaced with thymine/ T</i></li> <li>Mengubah turutan bes (bernitrogen)/ kodon/ urutan tiga bes (dalam rantai DNA)// penggantian bes// mutasi gen<br/><i>Changes the sequence of (nitrogenous) base/ codon/ series of three bases (in the DNA chain)// base substitution// gene mutation</i></li> <li>Menyebabkan perubahan kod genetik<br/><i>Caused changes in the genetic code</i></li> <li>Perubahan dalam urutan asid amino// satu asid glutamik digantikan oleh satu valina// sintesis asid amino<br/><i>Changes in the sequence of amino acid// one glutamic acid replaced by a valina// amino acid synthesis</i></li> <li>Perubahan dalam rantai polipeptida/ protein// protein baru yang disintesis tidak dapat berfungsi.<br/><i>Changes in polypeptide chain/ protein// new protein synthesised fail to function.</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1<br>1<br>1<br>1<br>1 |  |

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|  |         | <ul style="list-style-type: none"> <li>Menyebabkan sel darah merah berbentuk sabit<br/><i>Cause red blood cell look like a sickle/ crescent</i></li> </ul> <p>Tolak: hemoglobin berbentuk sabit<br/><i>Reject: haemoglobin in sickle shape</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1                                     | 4 |
|  | (b)(ii) | <ul style="list-style-type: none"> <li>Kurang (sintesis) hemoglobin dalam sel darah merah/ kurang (jumlah) luas permukaan sel darah merah.<br/><i>Reduces the (synthesis) of haemoglobin in the red blood cell/ less (total) surface area of red blood cells.</i></li> <li>Kurang oksigen bergabung dengan hemoglobin/ pembentukan oksihemoglobin<br/><i>Less oxygen bind to haemoglobin/ formation of oxyhaemoglobin</i></li> <li>Kurang oksigen dapat diangkut oleh sel darah merah ke sel/ tissu badan (terima: bentuk sel darah merah yang tidak tetap menyebabkan kesukaran terhadap pengaliran darah)<br/><i>Reduces the amount of oxygen that can be transported by red blood cell to the body cell/ tissue/ (accept: (Irregular/ abnormal) shape of red blood cells cause difficulty of blood flow)// less oxygen supply to the body cell</i></li> <li>Kurang respirasi sel// kurang pengoksidaan glukosa<br/><i>Less cellular respiration// less oxidation of glucose// less aerobic respiration</i></li> <li>Kurang tenaga dihasilkan<br/><i>Less energy produce</i></li> <li>Menyebabkan anemia yang kronik/ pucat/ lemah/ lesu/ mudah pita/ peningkatan denyutan jantung<br/><i>Cause chronic anaemia/ pale/ weak/ fatigue/ fainting easily/ increase heart rate</i></li> </ul> | 1<br><br>1<br><br>1<br><br>1<br><br>1 | 4 |

| (c)(i)  | <p><b>Persamaan</b></p> <ul style="list-style-type: none"><li>Kedua-dua menunjukkan perbezaan ciri dalam organisma daripada spesies yang sama<br/><i>Both show the differences in characteristics found in the same species</i></li><li>Kedua-dua membolehkan penyesuaian diri mengikut keadaan sekeliling/ persekitaran bagi kemandirian spesies<br/><i>Both enable to adapt to the surroundings for survival of the species</i></li></ul> <p><b>Perbezaan</b></p> <table><tr><th>Rajah 9.3/ <i>Diagram 9.3</i></th><th>Rajah 9.4/ <i>Diagram 9.4</i></th></tr><tr><th>Variasi Selanjar<br/><i>Continuous Variation</i></th><th>Variasi tak selanjar<br/><i>Discontinuous Variation</i></th></tr><tr><td>Perbezaan ciri yang tidak ketara// Ciri tidak boleh dibezakan dengan jelas<br/><i>Differences in characteristic is not distinct// Characteristics is not obvious</i></td><td>Perbezaan ciri yang ketara// Ciri boleh dibezakan dengan jelas<br/><i>Differences in characteristic is distinct// Characteristics is clearly defined/ obvious</i></td></tr><tr><td>Taburan normal// lengkung bentuk loceng<br/><i>Normal distribution // Bell-shaped curve</i></td><td>Taburan diskrit/ Carta bar<br/><i>Discrete distribution / Bar chart</i></td></tr><tr><td>Mempunyai ciri-ciri perantaraan<br/><i>Have intermediate features</i></td><td>Tiada ciri-ciri perantaraan<br/><i>Have no intermediate features</i></td></tr><tr><td>Kuantitatif// Boleh diukur<br/><i>Quantitative// Can be measured</i></td><td>Kualitatif// Tidak boleh diukur<br/><i>Qualitative// cannot be measured</i></td></tr><tr><td>Ciri-ciri dipengaruhi oleh faktor persekitaran (dan faktor genetik)<br/><i>Influenced by environmental factor (and genetic factor)</i></td><td>Ciri-ciri dipengaruhi oleh faktor genetik sahaja// Tidak dipengaruhi oleh faktor persekitaran//<br/><i>Influenced by genetic factor</i></td></tr><tr><td>Dikawal oleh banyak gen<br/><i>Controlled by many genes</i></td><td>Dikawal oleh satu gen<br/><i>Controlled by one gene</i></td></tr><tr><td>Ciri-ciri tidak boleh diwarisi<br/><i>Cannot be inherited</i></td><td>Ciri-ciri boleh diwarisi<br/><i>Can be inherited</i></td></tr></table> | Rajah 9.3/ <i>Diagram 9.3</i>                                                                                                                                       | Rajah 9.4/ <i>Diagram 9.4</i>                                                                                                                                    | Variasi Selanjar<br><i>Continuous Variation</i> | Variasi tak selanjar<br><i>Discontinuous Variation</i> | Perbezaan ciri yang tidak ketara// Ciri tidak boleh dibezakan dengan jelas<br><i>Differences in characteristic is not distinct// Characteristics is not obvious</i> | Perbezaan ciri yang ketara// Ciri boleh dibezakan dengan jelas<br><i>Differences in characteristic is distinct// Characteristics is clearly defined/ obvious</i> | Taburan normal// lengkung bentuk loceng<br><i>Normal distribution // Bell-shaped curve</i> | Taburan diskrit/ Carta bar<br><i>Discrete distribution / Bar chart</i> | Mempunyai ciri-ciri perantaraan<br><i>Have intermediate features</i> | Tiada ciri-ciri perantaraan<br><i>Have no intermediate features</i> | Kuantitatif// Boleh diukur<br><i>Quantitative// Can be measured</i> | Kualitatif// Tidak boleh diukur<br><i>Qualitative// cannot be measured</i> | Ciri-ciri dipengaruhi oleh faktor persekitaran (dan faktor genetik)<br><i>Influenced by environmental factor (and genetic factor)</i> | Ciri-ciri dipengaruhi oleh faktor genetik sahaja// Tidak dipengaruhi oleh faktor persekitaran//<br><i>Influenced by genetic factor</i> | Dikawal oleh banyak gen<br><i>Controlled by many genes</i> | Dikawal oleh satu gen<br><i>Controlled by one gene</i> | Ciri-ciri tidak boleh diwarisi<br><i>Cannot be inherited</i> | Ciri-ciri boleh diwarisi<br><i>Can be inherited</i> | 1 | 5 |
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| (c)(ii) | <p><b>Persamaan</b></p> <ul style="list-style-type: none"><li>Kedua-duanya melibatkan mutasi kromosom<br/><i>Both involved chromosomal mutation</i></li><li>Disebabkan oleh mutagen</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1                                                                                                                                                                   | 5                                                                                                                                                                |                                                 |                                                        |                                                                                                                                                                     |                                                                                                                                                                  |                                                                                            |                                                                        |                                                                      |                                                                     |                                                                     |                                                                            |                                                                                                                                       |                                                                                                                                        |                                                            |                                                        |                                                              |                                                     |   |   |
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|                                                  | <p><i>Caused by mutagen</i></p> <ul style="list-style-type: none"><li>• Berlaku semasa pembentukan gamet<br/><i>Takes place during gametes formation</i></li><li>• Tak disjungsi berlaku<br/><i>Nondisjunction occurs</i></li><li>• Perubahan secara spontan/ rawak pada kandungan genetik/ DNA<br/><i>Spontaneous/ random change of genetic materials/ DNA</i></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1                                                                                                                                                                                             |                                       |                                       |                                         |                                          |                                      |                                                  |                                                                                                        |                                                                                      |                          |                                                                                                                                                        |                                                                                                                                                                                               |                                            |                                        |                                                      |                               |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                          |   |  |
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|                                                  | <p><b>Perbezaan</b></p> <table><tr><th></th><th>Rajah 9.5(a)<br/><i>Diagram 9.5(a)</i></th><th>Rajah 9.5(b)<br/><i>Diagram 9.5(b)</i></th></tr><tr><td>Nama penyakit<br/><i>Genetic disease</i></td><td>Sindrom Turner<br/><i>Turner Syndrome</i></td><td>Sindrom Down<br/><i>Down syndrome</i></td></tr><tr><td>Bilangan kromosom<br/><i>Number of chromosome</i></td><td>Bilangan kromosom ialah 45 / 44 + X / 44 + XO<br/><i>Number of chromosomes is 45 / 44 + X / 44 + XO</i></td><td>Bilangan kromosom ialah 47 / 45 + XY<br/><i>Number of chromosomes is 47 / 45 + XY</i></td></tr><tr><td>Penyebab<br/><i>Cause</i></td><td>Kehilangan satu kromosom seks<br/><i>Loss of one sex chromosome</i><br/><br/>Terima: Monosomi (kromosom seks)<br/><i>Accept: Monosomy (sex chromosome)</i></td><td>Lebih satu kromosom nombor 21 // Mana-mana penerangan yang sesuai<br/><i>Extra one chromosome number 21 // Any relevant explanation</i><br/><br/>Terima: Trisomi 21<br/><i>Accept: Trisomy 21</i></td></tr><tr><td>Jantina terlibat<br/><i>Gender involved</i></td><td>Perempuan Sahaja<br/><i>Female only</i></td><td>Lelaki<br/><i>Male</i><br/>(terima lelaki &amp; perempuan)</td></tr><tr><td>Ciri<br/><i>Characteristic</i></td><td>Perempuan yang mandul // Kekurangan ciri-ciri seks sekunder perempuan // Buah dada dan ovarinya tidak berkembang // Individu ini mempunyai kulit berlipat pada kawasan leher // Lehernya bertaut // Mempunyai IQ yang rendah<br/><i>Sterile female // Lack of secondary female characteristics // Undeveloped breasts and</i></td><td>Mempunyai bentuk muka bulat / mata sepet / leher pendek // Mana – mana ciri yang betul<br/><i>Has moon face / slanted eyes / short neck // Any correct characteristic</i></td></tr></table> |                                                                                                                                                                                               | Rajah 9.5(a)<br><i>Diagram 9.5(a)</i> | Rajah 9.5(b)<br><i>Diagram 9.5(b)</i> | Nama penyakit<br><i>Genetic disease</i> | Sindrom Turner<br><i>Turner Syndrome</i> | Sindrom Down<br><i>Down syndrome</i> | Bilangan kromosom<br><i>Number of chromosome</i> | Bilangan kromosom ialah 45 / 44 + X / 44 + XO<br><i>Number of chromosomes is 45 / 44 + X / 44 + XO</i> | Bilangan kromosom ialah 47 / 45 + XY<br><i>Number of chromosomes is 47 / 45 + XY</i> | Penyebab<br><i>Cause</i> | Kehilangan satu kromosom seks<br><i>Loss of one sex chromosome</i><br><br>Terima: Monosomi (kromosom seks)<br><i>Accept: Monosomy (sex chromosome)</i> | Lebih satu kromosom nombor 21 // Mana-mana penerangan yang sesuai<br><i>Extra one chromosome number 21 // Any relevant explanation</i><br><br>Terima: Trisomi 21<br><i>Accept: Trisomy 21</i> | Jantina terlibat<br><i>Gender involved</i> | Perempuan Sahaja<br><i>Female only</i> | Lelaki<br><i>Male</i><br>(terima lelaki & perempuan) | Ciri<br><i>Characteristic</i> | Perempuan yang mandul // Kekurangan ciri-ciri seks sekunder perempuan // Buah dada dan ovarinya tidak berkembang // Individu ini mempunyai kulit berlipat pada kawasan leher // Lehernya bertaut // Mempunyai IQ yang rendah<br><i>Sterile female // Lack of secondary female characteristics // Undeveloped breasts and</i> | Mempunyai bentuk muka bulat / mata sepet / leher pendek // Mana – mana ciri yang betul<br><i>Has moon face / slanted eyes / short neck // Any correct characteristic</i> | 1 |  |
|                                                  | Rajah 9.5(a)<br><i>Diagram 9.5(a)</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Rajah 9.5(b)<br><i>Diagram 9.5(b)</i>                                                                                                                                                         |                                       |                                       |                                         |                                          |                                      |                                                  |                                                                                                        |                                                                                      |                          |                                                                                                                                                        |                                                                                                                                                                                               |                                            |                                        |                                                      |                               |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                          |   |  |
| Nama penyakit<br><i>Genetic disease</i>          | Sindrom Turner<br><i>Turner Syndrome</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Sindrom Down<br><i>Down syndrome</i>                                                                                                                                                          |                                       |                                       |                                         |                                          |                                      |                                                  |                                                                                                        |                                                                                      |                          |                                                                                                                                                        |                                                                                                                                                                                               |                                            |                                        |                                                      |                               |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                          |   |  |
| Bilangan kromosom<br><i>Number of chromosome</i> | Bilangan kromosom ialah 45 / 44 + X / 44 + XO<br><i>Number of chromosomes is 45 / 44 + X / 44 + XO</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Bilangan kromosom ialah 47 / 45 + XY<br><i>Number of chromosomes is 47 / 45 + XY</i>                                                                                                          |                                       |                                       |                                         |                                          |                                      |                                                  |                                                                                                        |                                                                                      |                          |                                                                                                                                                        |                                                                                                                                                                                               |                                            |                                        |                                                      |                               |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                          |   |  |
| Penyebab<br><i>Cause</i>                         | Kehilangan satu kromosom seks<br><i>Loss of one sex chromosome</i><br><br>Terima: Monosomi (kromosom seks)<br><i>Accept: Monosomy (sex chromosome)</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Lebih satu kromosom nombor 21 // Mana-mana penerangan yang sesuai<br><i>Extra one chromosome number 21 // Any relevant explanation</i><br><br>Terima: Trisomi 21<br><i>Accept: Trisomy 21</i> |                                       |                                       |                                         |                                          |                                      |                                                  |                                                                                                        |                                                                                      |                          |                                                                                                                                                        |                                                                                                                                                                                               |                                            |                                        |                                                      |                               |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                          |   |  |
| Jantina terlibat<br><i>Gender involved</i>       | Perempuan Sahaja<br><i>Female only</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Lelaki<br><i>Male</i><br>(terima lelaki & perempuan)                                                                                                                                          |                                       |                                       |                                         |                                          |                                      |                                                  |                                                                                                        |                                                                                      |                          |                                                                                                                                                        |                                                                                                                                                                                               |                                            |                                        |                                                      |                               |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                          |   |  |
| Ciri<br><i>Characteristic</i>                    | Perempuan yang mandul // Kekurangan ciri-ciri seks sekunder perempuan // Buah dada dan ovarinya tidak berkembang // Individu ini mempunyai kulit berlipat pada kawasan leher // Lehernya bertaut // Mempunyai IQ yang rendah<br><i>Sterile female // Lack of secondary female characteristics // Undeveloped breasts and</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Mempunyai bentuk muka bulat / mata sepet / leher pendek // Mana – mana ciri yang betul<br><i>Has moon face / slanted eyes / short neck // Any correct characteristic</i>                      |                                       |                                       |                                         |                                          |                                      |                                                  |                                                                                                        |                                                                                      |                          |                                                                                                                                                        |                                                                                                                                                                                               |                                            |                                        |                                                      |                               |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                          |   |  |
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|---------------------|--|-------------------------------------------------|------------------------------------------|---------------------------------------------------|------------|--|
|                     |  |                                                 | <i>ovaries // Weblike neck // Low IQ</i> |                                                   |            |  |
|                     |  | Kromosom terlibat<br><i>Chromosome involved</i> | Kromosom seks<br><i>Sex chromosomes</i>  | Kromosom Autosom<br><i>Autosome (chromosomes)</i> | 1          |  |
| <b>JUMLAH TOTAL</b> |  |                                                 |                                          |                                                   | <b>20M</b> |  |

**SOALAN 10/ QUESTION 10**

| NO. SOALAN/<br>QUESTION |         | CADANGAN JAWAPAN<br>SUGGESTED ANSWER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | MARKAH<br>MARKS  |   |
|-------------------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---|
| S10                     | (a)(i)  | <ul style="list-style-type: none"> <li>• Terdapat dalam akar ventral saraf spina// Akson yang panjang// Badan sel terdapat dalam jirim kelabu (saraf tunjang)// Dendrit yang pendek<br/><i>Located in the ventral root of the spinal nerve// Long axon // Cell bodies are found in the grey matter (in spinal cord)// Short dendrite</i></li> <li>• Menerima/ menghantar impuls saraf dari neuron deria kepada otot/ efektor<br/><i>Receives/ transmit nerve impulses from sensory neurone to muscles/ effector</i></li> </ul>                                                                                                                                                                                                                                                                             | 1                | 2 |
|                         | (a)(ii) | <ul style="list-style-type: none"> <li>• Neuron X ialah neuron deria<br/><i>Neurone X is sensory neurone</i></li> <li>• Neuron X/ deria tidak dapat menghantar impuls saraf ke neuron Y/ motor<br/><i>X/ Sensory neurone cannot transmit / send nerve impulse to Y/ motor neurone</i></li> <li>• Neuron Y/ motor tidak dapat menghantar impuls saraf ke otot (kuadriseps)/ efektor<br/><i>Y/ motor neurone cannot transmit/ send nerve impulse to the (quadriceps) muscle/ effector</i></li> <li>• Otot (kuadriseps)/ efektor tidak mengecut<br/><i>(Quadriceps) muscle/ effector does not contract</i></li> <li>• Kaki tidak tersentak ke hadapan/ tiada tindakan refleks/ tindakan refleks menjadi lambat<br/><i>The legs do not jerk/ lift forward/ no reflex actions/ reflex is delayed</i></li> </ul> | 1<br>1<br>1<br>1 | 4 |
|                         | (b)(i)  | <p><b>Persamaan</b></p> <ul style="list-style-type: none"> <li>• Kedua-dua tindakan melibatkan rangsangan/ impuls/ neuron/ efektor<br/><i>Both actions involve stimulus/ impulse/ neurone/ effector</i></li> <li>• Kedua-dua tindakan dikawal oleh otak<br/><i>Both actions control by brains</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1<br>1           |   |

|                                                                                                                                     | <b>Perbezaan</b> <table> <tr> <th>Tindakan M<br/><i>M actions</i></th> <th>Tindakan N<br/><i>N actions</i></th> </tr> <tr> <td>Tindakan terkawal<br/><i>Voluntary action</i></td> <td>Tindakan luar kawal<br/><i>Involuntary action</i></td> </tr> <tr> <td>Tindakan yang kita sedari//<br/>Dilakukan mengikut kehendak kita.<br/><i>Actions that we are conscious of// Done on our own will.</i></td> <td>Tindakan yang berlaku secara automatik// Berlaku tanpa kita sedari.<br/><i>Actions that occur automatically// Occurs without us being conscious.</i></td> </tr> <tr> <td>Melibatkan sistem saraf soma<br/><i>Involves the somatic nervous system.</i></td> <td>Melibatkan sistem saraf autonomi<br/><i>Involves the autonomous nervous system.</i></td> </tr> <tr> <td>Dikawal oleh serebrum (korteks) serebrum<br/><i>Controlled by cerebral cortex/ cerebrum</i></td> <td>Dikawal oleh medula oblongata/ hipotalamus<br/><i>Controlled by the medulla oblongata/ hypothalamus</i></td> </tr> <tr> <td>Melibatkan gerak balas otot rangka<br/><i>Involves the reaction of the skeletal muscles</i></td> <td>Melibatkan gerak balas otot licin<br/><i>Involves the reaction of the smooth muscle</i></td> </tr> <tr> <td><i>Response toward external stimuli</i></td> <td><i>Response toward internal stimuli</i></td> </tr> </table> | Tindakan M<br><i>M actions</i> | Tindakan N<br><i>N actions</i> | Tindakan terkawal<br><i>Voluntary action</i> | Tindakan luar kawal<br><i>Involuntary action</i> | Tindakan yang kita sedari//<br>Dilakukan mengikut kehendak kita.<br><i>Actions that we are conscious of// Done on our own will.</i> | Tindakan yang berlaku secara automatik// Berlaku tanpa kita sedari.<br><i>Actions that occur automatically// Occurs without us being conscious.</i> | Melibatkan sistem saraf soma<br><i>Involves the somatic nervous system.</i> | Melibatkan sistem saraf autonomi<br><i>Involves the autonomous nervous system.</i> | Dikawal oleh serebrum (korteks) serebrum<br><i>Controlled by cerebral cortex/ cerebrum</i> | Dikawal oleh medula oblongata/ hipotalamus<br><i>Controlled by the medulla oblongata/ hypothalamus</i> | Melibatkan gerak balas otot rangka<br><i>Involves the reaction of the skeletal muscles</i> | Melibatkan gerak balas otot licin<br><i>Involves the reaction of the smooth muscle</i> | <i>Response toward external stimuli</i> | <i>Response toward internal stimuli</i> | 1 | 4 |
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| Tindakan M<br><i>M actions</i>                                                                                                      | Tindakan N<br><i>N actions</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                |                                |                                              |                                                  |                                                                                                                                     |                                                                                                                                                     |                                                                             |                                                                                    |                                                                                            |                                                                                                        |                                                                                            |                                                                                        |                                         |                                         |   |   |
| Tindakan terkawal<br><i>Voluntary action</i>                                                                                        | Tindakan luar kawal<br><i>Involuntary action</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                |                                |                                              |                                                  |                                                                                                                                     |                                                                                                                                                     |                                                                             |                                                                                    |                                                                                            |                                                                                                        |                                                                                            |                                                                                        |                                         |                                         |   |   |
| Tindakan yang kita sedari//<br>Dilakukan mengikut kehendak kita.<br><i>Actions that we are conscious of// Done on our own will.</i> | Tindakan yang berlaku secara automatik// Berlaku tanpa kita sedari.<br><i>Actions that occur automatically// Occurs without us being conscious.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                |                                |                                              |                                                  |                                                                                                                                     |                                                                                                                                                     |                                                                             |                                                                                    |                                                                                            |                                                                                                        |                                                                                            |                                                                                        |                                         |                                         |   |   |
| Melibatkan sistem saraf soma<br><i>Involves the somatic nervous system.</i>                                                         | Melibatkan sistem saraf autonomi<br><i>Involves the autonomous nervous system.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                |                                |                                              |                                                  |                                                                                                                                     |                                                                                                                                                     |                                                                             |                                                                                    |                                                                                            |                                                                                                        |                                                                                            |                                                                                        |                                         |                                         |   |   |
| Dikawal oleh serebrum (korteks) serebrum<br><i>Controlled by cerebral cortex/ cerebrum</i>                                          | Dikawal oleh medula oblongata/ hipotalamus<br><i>Controlled by the medulla oblongata/ hypothalamus</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                |                                |                                              |                                                  |                                                                                                                                     |                                                                                                                                                     |                                                                             |                                                                                    |                                                                                            |                                                                                                        |                                                                                            |                                                                                        |                                         |                                         |   |   |
| Melibatkan gerak balas otot rangka<br><i>Involves the reaction of the skeletal muscles</i>                                          | Melibatkan gerak balas otot licin<br><i>Involves the reaction of the smooth muscle</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                |                                |                                              |                                                  |                                                                                                                                     |                                                                                                                                                     |                                                                             |                                                                                    |                                                                                            |                                                                                                        |                                                                                            |                                                                                        |                                         |                                         |   |   |
| <i>Response toward external stimuli</i>                                                                                             | <i>Response toward internal stimuli</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                |                                |                                              |                                                  |                                                                                                                                     |                                                                                                                                                     |                                                                             |                                                                                    |                                                                                            |                                                                                                        |                                                                                            |                                                                                        |                                         |                                         |   |   |
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| (b)(ii)                                                                                                                             | <b>Pemain badminton</b><br><i>Badminton player</i> <ul style="list-style-type: none"> <li>Pemain perlu dalam keadaan bersedia<br/><i>The player needs to be alert/ ready</i></li> <li>Pemain perlu tenaga yang lebih (untuk bermain)<br/><i>The player needs a lot of energy (to play the game)</i></li> <li>Otot (pemain) memerlukan lebih banyak oksigen/ kekurangan oksigen/ memerlukan lebih oksigen<br/><i>His muscles need more oxygen/ is lack of oxygen/ demand more oxygen</i></li> <li>Untuk menjalankan respirasi sel/ respirasi aerob// fermentasi asid laktik untuk menjana tenaga<br/><i>To carry out cellular respiration/ aerobic respiration// lactic acid fermentation to generate energy/ ATP</i></li> <li>Merangsang otot (kardium) jantung untuk mengecut dan mengendur dengan cepat<br/><i>Stimulate the cardiac muscles to contract and relax faster</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1                              | 6                              |                                              |                                                  |                                                                                                                                     |                                                                                                                                                     |                                                                             |                                                                                    |                                                                                            |                                                                                                        |                                                                                            |                                                                                        |                                         |                                         |   |   |
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|--|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|--|
|  |     | <ul style="list-style-type: none"> <li>• Kadar pernafasan/ kadar ventilasi meningkat<br/><i>Breathing/ ventilation rate increases</i></li> <li>• (Lebih) oksigen akan disedut masuk<br/><i>(More) oxygen will be taken in</i></li> <li>• Jantung akan dipam lebih cepat<br/><i>Heart will pump faster</i></li> <li>• Untuk mengangkut (lebih) oksigen// membayar hutang oksigen/ mengoksida laktik asid<br/><i>To transport (more) oxygen// to pay oxygen debt/ to oxidize the lactic acid</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1                               |  |
|  |     | <p><b>Peminat badminton</b><br/><i>Badminton fans</i></p> <ul style="list-style-type: none"> <li>• Peminat menjadi teruja<br/><i>Fans gets excited</i></li> <li>• Kelenjar adrenal akan dirangsang (oleh sistem saraf)<br/><i>Adrenal gland will be stimulated (by the nervous system)</i></li> <li>• (Kelenjar adrenal) merembes adrenalina (dan noradrenalina)// aras adrenalina/ (noradrenalina) meningkat<br/><i>(Adrenal gland) secrete adrenaline (noradrenaline)// adrenaline (noradrenaline) level increase</i></li> <li>• Adrenalina (dan noradrenalina) meningkatkan kadar pernafasan/ denyutan jantung/ tekanan darah// Meningkatkan aras glukosa// Meningkatkan kadar respirasi/ kadar ventilasi/ kadar metabolisme meningkat<br/><i>Adrenaline (and noradrenaline) increase the breathing rate/ heartbeat/ blood pressure// Increase glucose level// increase respiratory/ ventilation rate/ metabolic rate increase</i></li> <li>• Untuk membekalkan lebih oksigen dan glukosa (melalui darah) ke otot (dan otak)<br/><i>To supply more oxygen and glucose (through the blood) to the muscle (and brain)</i></li> <li>• Untuk membebaskan lebih tenaga<br/><i>More energy is released</i></li> <li>• Untuk peminat menghadapi situasi lawan atau lari<br/><i>For the fans to face the flight or fight situation</i></li> </ul> | 1<br>1<br>1<br>1<br>1<br>1<br>1 |  |
|  |     | <p>Diabetes melitus<br/><i>Diabetes mellitus</i></p> <p style="text-align: right;"><b>Terima: <u>Penyakit</u> kencing manis</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1                               |  |
|  | (c) | <ul style="list-style-type: none"> <li>• Organ tersebut ialah pankreas<br/><i>The organ is a pancreas</i></li> <li>• Tidak menghasilkan insulin yang mencukupi<br/><i>Does not produce enough insulin</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1<br>1                          |  |

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|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---|
|                     | <ul style="list-style-type: none"> <li>• Badan tidak boleh menggunakan insulin yang dihasilkan<br/><i>Body cannot use the insulin produced</i></li> </ul>                                                                                                                                                                                                                         | 1          |   |
|                     | <ul style="list-style-type: none"> <li>• (Kekurangan insulin menyebabkan) aras glukosa dalam darah menjadi tinggi/ glukosa berlebihan tidak boleh ditukarkan kepada glikogen<br/><i>(Lack of insulin causes) the level of glucose in the blood become high// excess glucose cannot be converted into glycogen</i></li> </ul>                                                      | 1          | 4 |
|                     | <ul style="list-style-type: none"> <li>• (Simptom diabetes mellitus yang lain) kebas- kebas di kaki// penglihatan kabur<br/><i>(Other symptom of diabetes mellitus) experiences numbness in the soles of the feet// blurred vision.</i></li> </ul>                                                                                                                                | 1          |   |
|                     | <ul style="list-style-type: none"> <li>• (Disebabkan oleh) rembesan insulin berlebihan// Rembesan glukagon berkurangan<br/><i>(Caused by) excessive secretion of insulin// Decrease secretion of glucagon</i></li> </ul>                                                                                                                                                          | 1          |   |
|                     | <ul style="list-style-type: none"> <li>• (Menyebabkan) hipoglisemia<br/><i>(Causes) hypoglycaemia</i></li> </ul>                                                                                                                                                                                                                                                                  | 1          |   |
|                     | <ul style="list-style-type: none"> <li>• Aras glukosa dalam darah menjadi sangat rendah// glikogen tidak boleh ditukarkan kepada glukosa<br/><i>Glucose level in blood become very low// glycogen cannot be converted to glucose</i></li> </ul>                                                                                                                                   | 1          |   |
|                     | <ul style="list-style-type: none"> <li>• Kurang respirasi sel// kurang tenaga dihasilkan<br/><i>Less cellular respiration// less energy produce</i></li> </ul>                                                                                                                                                                                                                    | 1          |   |
|                     | <ul style="list-style-type: none"> <li>• (Simptom hipoglisemia yang lain ialah) Sukar tidur pada waktu malam// Pemikiran bercelaru// Perasaan takut// Ketidakstabilan emosi// Mudah pengan// Sakit kepala<br/><i>Other symptoms of hypoglycaemia are difficulties sleeping at night/ Disordered thoughts// Fear// Emotional instability// Faints easily// Headache</i></li> </ul> | 1          |   |
|                     | <b>Tolak: Diabetes Sahaja</b>                                                                                                                                                                                                                                                                                                                                                     |            |   |
| <b>JUMLAH TOTAL</b> |                                                                                                                                                                                                                                                                                                                                                                                   | <b>20M</b> |   |

**BAHAGIAN C**  
**SECTION C**

**SOALAN 11/ QUESTION 11**

| NO.<br>SOALAN /<br>QUESTION |     | CADANGAN JAWAPAN<br>SUGGESTED ANSWER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | MARKAH<br>MARKS            |   |
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| S11                         | (a) | <ul style="list-style-type: none"> <li>Setiap nama saintifik terdiri daripada dua perkataan// nama genus dan nama spesies<br/><i>Each scientific name consists of two words// consists of a genus name and a species name.</i></li> <li>Nama genus/ <b>perkataan pertama</b> bermula dengan huruf besar manakala nama spesies/ <b>perkataan kedua</b> bermula dengan huruf kecil.<br/><i>Genus name/ first word begins with a capital letter while species name/ second word begin with a lowercase letter.</i></li> <li>Nama saintifik dicetak dalam bentuk huruf italic// Nama saintifik yang ditulis, kedua-dua nama/ perkataan mesti digaris secara berasingan.<br/><i>Scientific names are printed in italics// Scientific names are written, both names/ words must be underlined separately.</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1                          | 3 |
|                             | (b) | <ul style="list-style-type: none"> <li>Pertumbuhan anak pokok berkurang/ terbantut<br/><i>Plant seedlings growth is reduced/ stunted</i></li> <li>(Apabila pokok legum mati) <i>Rhizobium</i> sp. tidak boleh hidup pada akar tumbuhan// tiada/ kurang <i>Rhizobium</i> sp.<br/><i>(When leguminous plant die) Rhizobium sp. cannot live on the plant roots// no/ less Rhizobium sp.</i></li> <li><i>Rhizobium</i> sp./ Bakteria tidak mengikat/ menukarkan nitrogen di udara kepada sebatian ammonium// kurang proses pengikatan nitrogen<br/><i>Rhizobium sp./ Bacteria do not fix/ convert nitrogen in the air to ammonium compounds// less nitrogen fixing process</i></li> <li>Kurang nitrit di dalam tanah// Ion ammonia kurang ditukarkan kepada ion nitrit/ <math>\text{NO}_2^-</math> (melalui proses nitrifikasi)// kurang proses nitrifikasi<br/><i>Less nitrites in the soil// Ammonia ion is less converted to nitrite ion / <math>\text{NO}_2^-</math> (through nitrification process)// less nitrification process</i></li> <li>oleh bakteria nitrifikasi/ <i>Nitrosomonas</i> sp.<br/><i>by nitrifying bacterial/ Nitrosomonas sp.</i></li> <li>Ion nitrit kurang ditukarkan kepada ion nitrat / <math>\text{NO}_3^-</math> // Kurang nitrat di dalam tanah<br/><i>Nitrite ions are less converted to nitrate ions / <math>\text{NO}_3^-</math> // Less nitrates in the soil</i></li> </ul> | 1<br>1<br>1<br>1<br>1<br>1 | 7 |

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|     | <ul style="list-style-type: none"> <li>oleh bakteria nitrifikasi// <i>Nitrobacter</i> sp.<br/><i>by nitrifying bacterial// Nitrobacter</i> sp.</li> <li>Kurang nitrat diserap oleh anak pokok// tanah kurang subur<br/><i>Less nitrate is absorbed by plant seedling// soil less fertile</i></li> <li>Anak pokok kurang mensintesis protein<br/><i>Plant seedlings synthesize less protein</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1                                         |   |
| (c) | <ul style="list-style-type: none"> <li>Meningkatkan populasi Harimau Malaya<br/><i>Increasing the Malayan Tiger population</i></li> <li>Mengelakkan kepupusan spesies Harimau Malaya<br/><i>Preventing the extinction of the Malayan Tiger species</i></li> <li>Meneruskan kemandirian spesies<br/><i>Continuing the survival of the species</i></li> <li>Menambah bilangan pelancong (dari dalam dan luar negara)<br/><i>Increasing the number of tourists (domestic and international)</i></li> <li>Meningkatkan ekonomi negara (melalui kemasukan pelancong ke Zoo Negara)<br/><i>Increasing the national economy (through the influx of tourists to Zoo Negara)</i></li> <li>Mengembangkan ilmu penyelidikan saintifik// penyediaan pusat konservasi Harimau Malaya<br/><i>Developing scientific research knowledge/ establish conservation center for Malayan Tiger</i></li> <li>Mengekalkan keseimbangan ekosistem / rantai makanan / siratan makanan<br/><i>Maintain balance ecosystem / food chain / food web</i></li> <li>Meningkat kesedaran tentang status ancaman/ kepupusan terhadap Harimau Malaya<br/><i>Increase awareness about the endangered status of Malayan Tiger</i></li> <li>Mengekalkan hutan simpan yang sedia ada/ tidak mengganggu/ merosakkan habitat Harimau Malaya<br/><i>Preserve existent reserved forest/ to avoid destroyal of Malayan Tigers' natural habitat.</i></li> <li>Mengurangkan pemburuan haram<br/><i>Decrease illegal hunting/ poarching</i></li> </ul> | 1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1 | 6 |

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|               | (d) | <ul style="list-style-type: none"> <li>Menggunakan mentol LED/ alat elektrik yang cekap tenaga// Tutup suis peralatan elektrik jika tidak digunakan// Penggunaan tenaga solar<br/><i>Use LED bulb/ energy-efficient electrical appliances// Turn off electrical appliances when not in use// Use of solar energy (Accept: any example of explaining, reducing electrical usage)</i></li> </ul> | 1    | 4 |
|               |     | <ul style="list-style-type: none"> <li>Mengurangkan penggunaan air// Terima apa-apa contoh penerangan mengurangkan penggunaan air<br/><i>Reducing water usage// Any example of explaining reducing water usage</i></li> </ul>                                                                                                                                                                  | 1    |   |
|               |     | <ul style="list-style-type: none"> <li>Memaksimumkan kertas yang mempunyai halaman kosong/ menggunakan kedua-dua halaman kertas// penggunaan alat pembelajaran digital<br/><i>Maximize paper with blank pages// Use both sides of paper// Use of digital learning tools</i></li> </ul>                                                                                                         | 1    |   |
|               |     | <ul style="list-style-type: none"> <li>Menggunakan bateri yang boleh dicas semula// Terima apa-apa contoh yang sesuai<br/><i>Using rechargeable batteries// Any suitable example</i></li> </ul>                                                                                                                                                                                                | 1    |   |
|               |     | <ul style="list-style-type: none"> <li>Mengurangkan penggunaan plastik sekali guna// Penggunaan beg guna semula// Guna bekas makanan dan minuman sendiri<br/><i>Reduce the use of single-use plastics// Use reusable bag // Use your own food and drink containers</i></li> </ul>                                                                                                              | 1    |   |
|               |     | <ul style="list-style-type: none"> <li>Terima apa-apa langkah yang sesuai dengan konsep 'Kurangkan' (Reduce)<br/><i>Accept any suitable steps related to reduce concept</i></li> </ul>                                                                                                                                                                                                         | 1    |   |
| Jumlah Markah |     |                                                                                                                                                                                                                                                                                                                                                                                                | 20 M |   |