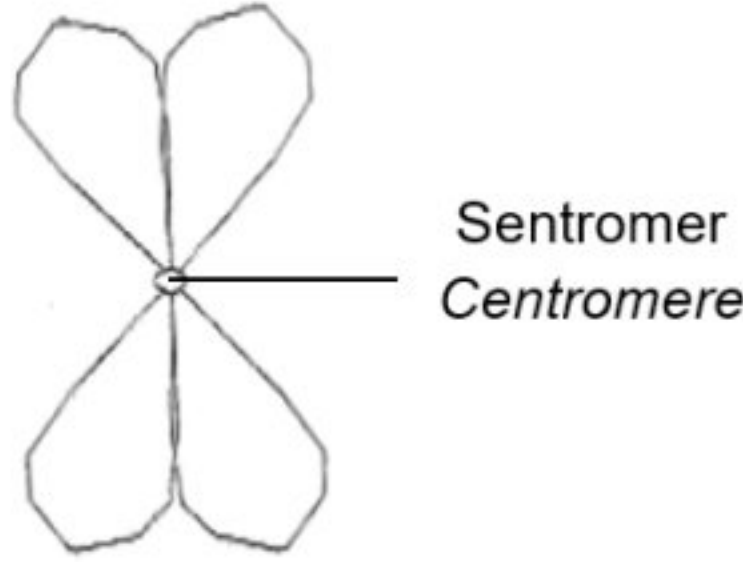


BAHAGIAN A

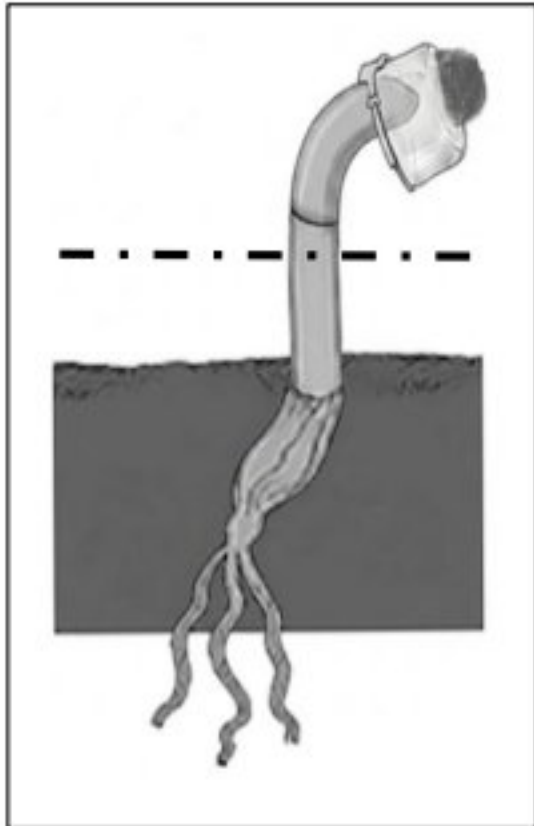
Skema Soalan 1

| No 1    | Cadangan Jawapan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Markah                       |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| (a)(i)  | <p>Dapat menyatakan nama bagi proses R dan nama ikatan yang terbentuk dalam molekul X.</p> <p>Jawapan:</p> <p>Nama bagi Proses R: Kondensasi</p> <p><i>Condensation</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2<br><br>1                   |
| (a)(ii) | <p>Nama ikatan yang terbentuk dalam molekul X: Ikatan peptida</p> <p><i>Peptide bond</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1                            |
| (b)     | <p>Dapat menulis persamaan perkataan bagi tindak balas biokimia yang berlaku dalam Rajah 1.1.</p> <p>Jawapan:</p> <p>Rubrik:</p> <p>P1: Dipeptida</p> <p>P2: Keseluruhan persamaan perkataan</p> <div><div><div>Dipeptida</div><div><i>Dipeptide</i></div></div><div>+</div><div><div>Asid amino</div><div><i>Amino acid</i></div></div><div><div>Kondensasi</div><div><i>Condensation</i></div></div><div><div>Poliipeptida</div><div><i>Polypeptide</i></div></div><div>+</div><div><div>Air</div><div><i>Water</i></div></div></div>                                                                                                                                                               | 2<br><br>1<br>1              |
| (c)     | <p>Dapat menerangkan fungsi rawatan Terapi Penggantian Enzim Pankreas (PERT) yang diambil dalam bentuk kapsul untuk membantu pencernaan protein.</p> <p>Jawapan :</p> <p>P1: Kapsul (PERT) mengandungi enzim protease / tripsin / pepsin</p> <p><i>The (PERT) capsule contains protease / trypsin / pepsin enzymes</i></p> <p>P2: Menghidrolisis molekul protein kepada polipeptida / asid amino</p> <p><i>Hydrolyse protein molecules into polypeptides / amino acids</i></p> <p>P3: Asid amino dapat diserap melalui dinding usus kecil ke dalam aliran darah</p> <p><i>The amino acids can then be absorbed through the wall of the small intestine into the bloodstream</i></p> <p>Maksimum 2</p> | 2<br><br>1<br><br>1<br><br>1 |
|         | JUMLAH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 6                            |

## Skema Soalan 2

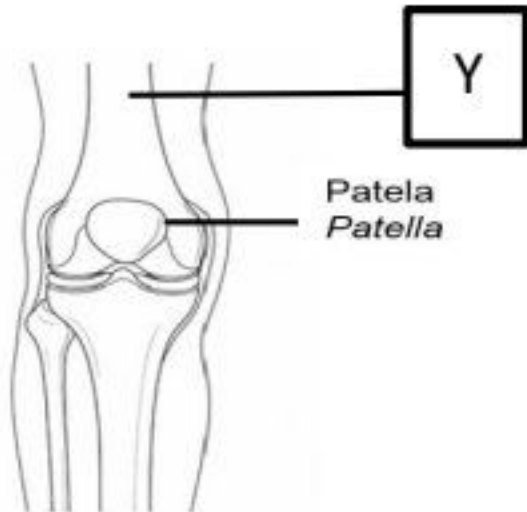
| No 2    | Cadangan Jawapan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Markah                                     |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| (a)     | <p><b>Dapat mengenalpasti Fasa J.</b></p> <p><b>Jawapan:</b></p> <p>Interfasa</p> <p><i>Interphase</i></p> <p><b>Reject:</b> Ejaan salah</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p><b>1</b></p> <p>1</p>                   |
| (b)(i)  | <p><b>Dapat melengkapkan Rajah 2.2 untuk menunjukkan perlakuan kromosom dalam fasa tersebut.</b></p> <p><b>Jawapan:</b></p>  <p>Rajah betul – 1m</p> <p>Label sentromer mesti betul – 1m</p>                                                                                                                                                                                                                                                                                                             | <b>2</b>                                   |
| (b)(ii) | <p><b>Dapat menyatakan proses yang berlaku dalam fasa S.</b></p> <p><b>Jawapan:</b></p> <p>Sintesis / Replikasi DNA // Duplikasi kromosom</p> <p><i>DNA synthesis / Replication // Chromosome duplication</i></p>                                                                                                                                                                                                                                                                                                                                                                           | <p><b>1</b></p> <p>1</p>                   |
| (c)     | <p><b>Dapat menerangkan peranan vesikel dalam sel tumbuhan sehingga terbentuknya dua sel anak yang baharu semasa pembahagian sel.</b></p> <p><b>Jawapan:</b></p> <p>P1: Vesikel berkumpul di tengah – tengah sel</p> <p><i>Vesicles gather in the center of the cell</i></p> <p>P2: Vesikel bergabung membentuk plat sel</p> <p><i>Vesicles combine to form the cell plate</i></p> <p>P3: Plat sel berkembang ke arah luar / bercantum dengan membran plasma</p> <p><i>Cell plate expands outwards / fuses with plasma membrane</i></p> <p style="text-align: right;"><b>Maksimum 2</b></p> | <p><b>2</b></p> <p>1</p> <p>1</p> <p>1</p> |
|         | <b>JUMLAH</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>6</b>                                   |

### SKEMA SOALAN 3

| No 3     | Cadangan Jawapan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Markah                                     |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| (a)(i)   | <p><b>Dapat mengenalpasti hormon yang terlibat dalam kedua-dua gerak balas tersebut.</b></p> <p><b>Jawapan:</b></p> <p>Auksin</p> <p><i>Auxins</i></p> <p><b>Reject:</b> Ejaan salah</p>                                                                                                                                                                                                                                                                                                                                            | <p><b>1</b></p> <p>1</p>                   |
| (a)(ii)  | <p><b>Dapat melukis pemerhatian bagi gerak balas pertumbuhan koleptil A selepas dua hari di ruangan yang disediakan pada Rajah 3.1.</b></p> <p><b>Jawapan:</b></p>  <p>Nota:</p> <ol style="list-style-type: none"> <li>1. Koleoptil mesti melepasi aras garis / tinggi (menunjukkan ada pertumbuhan berlaku)</li> <li>2. Koleoptil tumbuh bengkok ke kanan</li> </ol>                                                                            | <p><b>1</b></p> <p>1</p>                   |
| (a)(iii) | <p><b>Dapat menerangkan pemerhatian bagi koleoptil B selepas dua hari rawatan dilakukan.</b></p> <p><b>Jawapan:</b></p> <p>P1: Auksin meresap ke bawah / zon pemanjangan dengan sekata</p> <p><i>Auxin diffuses evenly downwards / to the elongation zone</i></p> <p>P2: Auksin merangsang pemanjangan sel pada kadar yang sama</p> <p><i>Auxin stimulates cell elongation at the same rate</i></p> <p>P3: Koleoptil B tumbuh <u>tegak</u> ke atas</p> <p><i>The coleoptile B grows <u>upright</u></i></p> <p><b>Maksimum 2</b></p> | <p><b>2</b></p> <p>1</p> <p>1</p> <p>1</p> |
| (b)      | <p><b>Dapat menerangkan kesan kepada buah mangga jika paket penyerap gas tidak diletakkan di dalam kotak tersebut.</b></p> <p><b>Jawapan:</b></p> <p>P1: Gas etilena yang dibebaskan oleh buah mangga matang.</p>                                                                                                                                                                                                                                                                                                                   | <p><b>3</b></p> <p>1</p>                   |

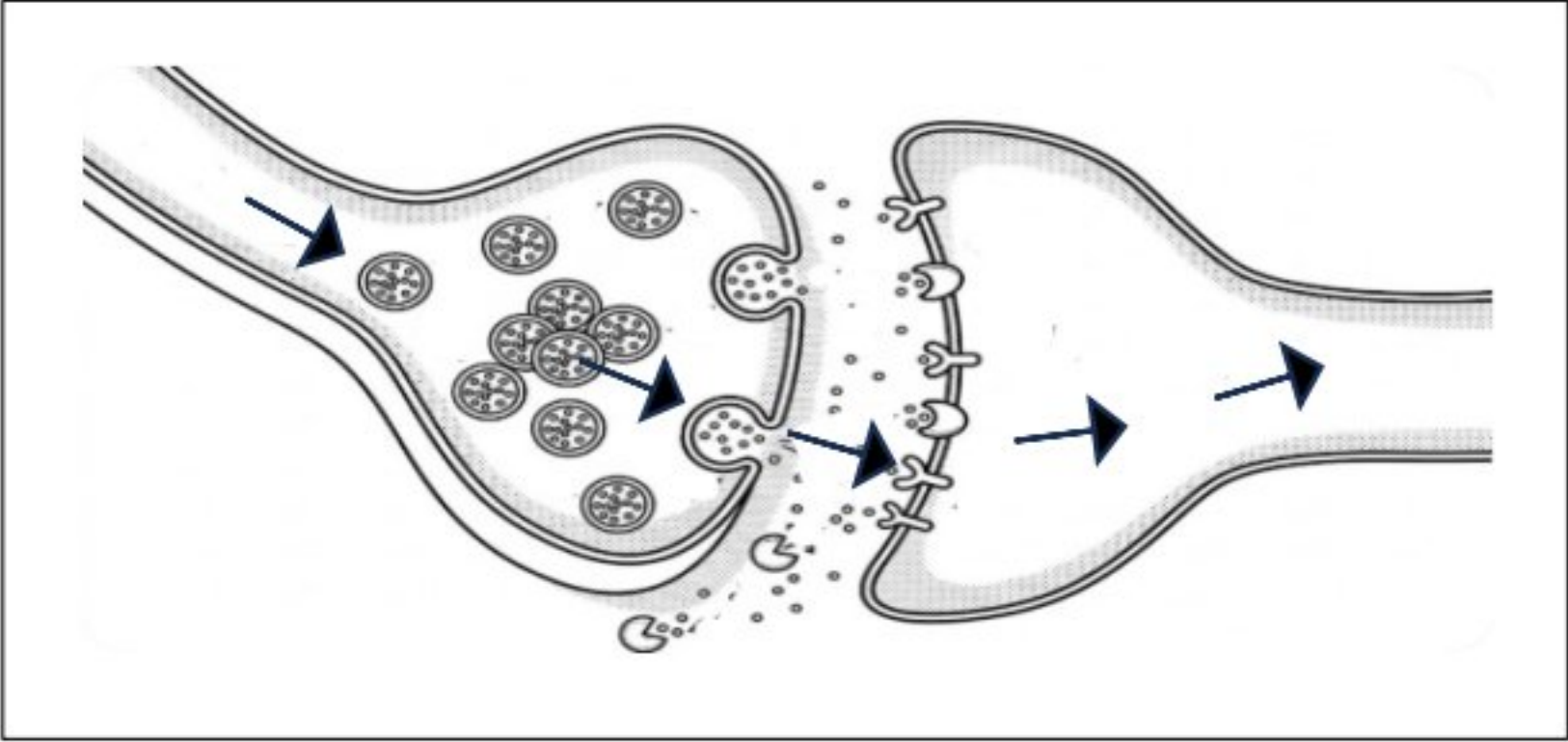
|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                            |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|  | <p><i>Ethylene gas released by the ripe mangoes.</i></p> <p>P2: Menyebabkan kepekatan etilena dalam kotak meningkat / terperangkap di dalam kotak tertutup.</p> <p><i>Causes the concentration of ethylene in the box to increase / is trapped inside the closed box.</i></p> <p>P3: Merangsang tindakan enzim seperti pektinase / selulase / amilase dengan sangat pantas</p> <p><i>Stimulates enzymes action such as pectinase / cellulase / amylase very rapidly</i></p> <p>P4: Buah mangga akan menjadi terlalu masak / lembik / rosak / busuk (sebelum sampai ke destinasi)</p> <p><i>The mangoes will become overripe / soft / damaged / rotten (before reaching the destination)</i></p> <p style="text-align: right;"><b>Maksimum 3</b></p> | <p>1</p> <p>1</p> <p>1</p> |
|  | <b>JUMLAH</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>7</b>                   |

#### SKEMA SOALAN 4

| No 4    | Cadangan Jawapan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Markah                                       |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| (a)(i)  | <p><b>Dapat melabelkan tulang femur dengan huruf Y.</b></p> <p><b>Jawapan:</b></p>                                                                                                                                                                                                                                                                                                                                                        | <p>1</p> <p>1</p>                            |
| (a)(ii) | <p><b>Dapat memberikan dua kepentingan tulang yang dilabekan dalam a (i).</b></p> <p><b>Jawapan:</b></p> <p>P1: Menyokong berat badan / tisu badan // Mengekalkan bentuk badan</p> <p><i>Supports body weight / body tissues // Maintains body shape</i></p> <p>P2: Membenarkan pergerakan</p> <p><i>Allows movement</i></p> <p>P3: Menyimpan mineral</p> <p><i>Stores mineral</i></p> <p>P4: Tempat pembentukan sel darah</p> <p><i>Site of blood cell formation</i></p> <p style="text-align: right;"><b>Maksimum 2</b></p> | <p>2</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> |

| (b)                                                                     | <p><b>Dapat menerangkan bagaimana kecederaan itu meyukarkan pergerakan pemain tersebut.</b></p> <p><b>Jawapan:</b></p> <p>P1: Bengkak pada lutut // Deformity // Bentuk lutut berubah<br/><i>Swelling of the knee // Deformity // Change in the shape of the knee</i></p> <p>P2: Kecederaan / kerosakan ligamen<br/><i>Injury / damage of ligament</i></p> <p>P3: Patela tidak berada pada tempatnya / dislokasi<br/><i>Patella is not in place / dislocation</i></p> <p>P4: Kaki tidak boleh dilurus / dibengkokkan<br/><i>Leg cannot be straightened / bent</i></p> <p style="text-align: right;"><b>Maksimum 2</b></p>                                                                                                                                                                                              | <p><b>2</b></p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> |         |                                     |                                     |                                                                         |                                                   |                                                 |                                                    |                                                        |                                                                                                                   |                                                     |
|-------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|---------|-------------------------------------|-------------------------------------|-------------------------------------------------------------------------|---------------------------------------------------|-------------------------------------------------|----------------------------------------------------|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| (c)                                                                     | <p><b>Dapat membezakan penyakit yang dihadapi oleh individu 4.3 (a) dan 4.3 (b).</b></p> <p><b>Jawapan:</b></p> <table><tr><th>4.3 (a)</th><th>4.3 (b)</th></tr><tr><td>Osteoporosis<br/><i>Osteoporosis</i></td><td>Osteomalacia<br/><i>Osteomalacia</i></td></tr><tr><td>Tulang menjadi rapuh / berongga<br/><i>Bones become brittle / hollow</i></td><td>Tulang menjadi lembut<br/><i>Bones become soft</i></td></tr><tr><td>Tulang mudah patah<br/><i>Bones easily break</i></td><td>Tulang menjadi bengkok<br/><i>Bones become bent</i></td></tr><tr><td>Kekurangan hormon estrogen<br/><i>Lack of oestrogen</i></td><td>Kekurangan kalsium dan vitamin D (bekalkan pada fetus)<br/><i>Lack of calcium and vitamin D (supply to foetus)</i></td></tr></table> <p style="text-align: right;"><b>Maksimum 2</b></p> | 4.3 (a)                                             | 4.3 (b) | Osteoporosis<br><i>Osteoporosis</i> | Osteomalacia<br><i>Osteomalacia</i> | Tulang menjadi rapuh / berongga<br><i>Bones become brittle / hollow</i> | Tulang menjadi lembut<br><i>Bones become soft</i> | Tulang mudah patah<br><i>Bones easily break</i> | Tulang menjadi bengkok<br><i>Bones become bent</i> | Kekurangan hormon estrogen<br><i>Lack of oestrogen</i> | Kekurangan kalsium dan vitamin D (bekalkan pada fetus)<br><i>Lack of calcium and vitamin D (supply to foetus)</i> | <p><b>2</b></p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> |
| 4.3 (a)                                                                 | 4.3 (b)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                     |         |                                     |                                     |                                                                         |                                                   |                                                 |                                                    |                                                        |                                                                                                                   |                                                     |
| Osteoporosis<br><i>Osteoporosis</i>                                     | Osteomalacia<br><i>Osteomalacia</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                     |         |                                     |                                     |                                                                         |                                                   |                                                 |                                                    |                                                        |                                                                                                                   |                                                     |
| Tulang menjadi rapuh / berongga<br><i>Bones become brittle / hollow</i> | Tulang menjadi lembut<br><i>Bones become soft</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                     |         |                                     |                                     |                                                                         |                                                   |                                                 |                                                    |                                                        |                                                                                                                   |                                                     |
| Tulang mudah patah<br><i>Bones easily break</i>                         | Tulang menjadi bengkok<br><i>Bones become bent</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                     |         |                                     |                                     |                                                                         |                                                   |                                                 |                                                    |                                                        |                                                                                                                   |                                                     |
| Kekurangan hormon estrogen<br><i>Lack of oestrogen</i>                  | Kekurangan kalsium dan vitamin D (bekalkan pada fetus)<br><i>Lack of calcium and vitamin D (supply to foetus)</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                     |         |                                     |                                     |                                                                         |                                                   |                                                 |                                                    |                                                        |                                                                                                                   |                                                     |
|                                                                         | <b>JUMLAH</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p><b>7</b></p>                                     |         |                                     |                                     |                                                                         |                                                   |                                                 |                                                    |                                                        |                                                                                                                   |                                                     |

Skema Soalan 5

| No 5     | Cadangan Jawapan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Markah |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| (a) (i)  | <b>Dapat mengenal pasti bahan X dan menyatakan satu contoh bahan X</b><br><b>Jawapan:</b><br>Neurotransmitter<br><i>Neurotransmitters</i><br><b>Reject:</b> Ejaan salah                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 2      |
| (ii)     | Asetilkolina // Noradrenalina // Serotonin // Dopamina<br><i>Acetylcholine // Noradrenaline // Serotonin // Dopamine</i><br><b>Reject:</b> Ejaan salah                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1      |
| (a)(iii) | <b>Dapat menanda arah penghantaran impuls.</b><br><b>Jawapan:</b><br>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1      |
| (b)      | <b>Dapat menerangkan kesan pengambilan pil tersebut ke atas penghantaran impuls melalui sinaps seorang individu yang mengalami keresahan melampau.</b><br><b>Jawapan:</b><br>P1: Pil mengandungi dadah penenang / depresen<br><i>The pill contains a sedative / depressant drug</i><br>P2: Tiada / kurang neurotransmitter dihasilkan / dibebaskan ke celah sinaps<br><i>No / less neurotransmitters are produced / released into the synaptic cleft</i><br>P3: Penghantaran impuls saraf menjadi perlahan / dilambatkan // terima apa-apa penerangan mengenai kekurangan neurotransmitter<br><i>Transmission of nerve impulses becomes slower / is slowed down // accept any explanation related to the lack of neurotransmitters</i><br>P4: Individu itu lebih tenang / kurang cemas / mudah mengantuk<br><i>The individual becomes calmer / less anxious / easily drowsy</i><br><b>Maksimum 3</b> | 3      |

|     |                                                                                                        |                                                                          |                                                       |          |
|-----|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|-------------------------------------------------------|----------|
| (c) | <b>Dapat membezakan Individu X dan Individu Y berdasarkan aspek isu kesihatan dan rembesan hormon.</b> |                                                                          |                                                       | <b>2</b> |
|     | <b>Jawapan:</b>                                                                                        |                                                                          |                                                       |          |
|     | <b>Aspek</b><br><i>Aspects</i>                                                                         | <b>Individu X</b><br><i>Individual X</i>                                 | <b>Individu Y</b><br><i>Individual Y</i>              |          |
|     | Masalah kesihatan<br><i>Health problems</i>                                                            | Hipotiroidisme<br><i>Hypothyroidism</i>                                  | Hipertiroidisme<br><i>Hyperthyroidism</i>             |          |
|     | Rembesan hormon<br><i>Hormone secretion</i>                                                            | Tiroksina tidak mencukupi / kurang<br><i>Inadequate / less thyroxine</i> | Tiroksina terlalu banyak<br><i>Too much thyroxine</i> |          |
|     | <b>Reject:</b> Ejaan salah untuk masalah kesihatan                                                     |                                                                          |                                                       |          |
|     | <b>JUMLAH</b>                                                                                          |                                                                          |                                                       | <b>8</b> |

Skema Soalan 6

| No 6    | Cadangan Jawapan                                                                                                                                 | Markah   |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| (a)     | <b>Dapat mendefinisikan alel.</b>                                                                                                                | <b>2</b> |
|         | <b>Jawapan:</b>                                                                                                                                  |          |
|         | P1: Bentuk alternatif gen<br><i>Alternative form of gene</i>                                                                                     | 1        |
|         | P2: bagi trait tertentu warna anak mata<br><i>for certain traits of eye colour</i>                                                               | 1        |
|         | P3: yang berada pada lokus yang sama<br><i>which is at the same locus</i>                                                                        | 1        |
|         | <b>Maksimum 2</b>                                                                                                                                |          |
| (b)(i)  | <b>Dapat melengkapkan Rajah 6.2.</b>                                                                                                             | <b>1</b> |
|         | <b>Jawapan:</b><br><b>Rh<sup>+</sup> Rh<sup>-</sup></b>                                                                                          | 1        |
| (b)(ii) | <b>Dapat menerangkan dari segi faktor rhesus kenapa anak pertama lahir dengan selamat tetapi anak kedua mengalami komplikasi kelahiran mati.</b> | <b>3</b> |
|         | <b>Jawapan :</b>                                                                                                                                 |          |
|         | P1 : Anak kelahiran seterusnya juga adalah Rhesus positif<br><i>The next born child is also Rhesus positive</i>                                  | 1        |
|         | P2 : Ibu telah mempunyai kepekatan antibodi anti-D yang tinggi (selepas                                                                          | 1        |

|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                     |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
|          | <p>kelahiran pertama)</p> <p><i>His mother had a high concentration of anti-D antibodies (after first born)</i></p> <p>P3 : Antibodi anti-D dari ibu merentasi plasenta</p> <p><i>Anti-D antibodies cross the placenta</i></p> <p>P4 : Memusnahkan sel darah merah fetus // erythroblastosis fetalis</p> <p><i>Destroys fetal red blood cells // erythroblastosis fetalis</i></p> <p style="text-align: right;"><b>Maksimum 3</b></p>                                                                                                                                                                      | <p>1</p> <p>1</p>                   |
| (b)(iii) | <p><b>Dapat mewajarkan kepentingan saranan doktor tersebut.</b></p> <p><b>Jawapan:</b></p> <p>P1 : Suntikan diambil dalam tempoh kehamilan</p> <p><i>Injections taken during pregnancy</i></p> <p>P2 : (Rawatan globulin Anti Rhesus) untuk menghentikan pembentukan antibodi anti-D dalam darah ibu</p> <p><i>(Anti Rhesus globulin treatment) to stop the formation of anti-D antibodies in the mother's blood</i></p> <p>P3 : Untuk mencegah pemusnahan sel darah merah fetus</p> <p><i>To prevent the destruction of fetal red blood cells</i></p> <p style="text-align: right;"><b>Maksimum 2</b></p> | <p>2</p> <p>1</p> <p>1</p> <p>1</p> |
|          | <b>JUMLAH</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>8</b>                            |

#### Skema Soalan 7

| No 7    | Cadangan Jawapan                                                                                                                                                                                                                                                                                                                                                                    | Markah            |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| (a)(i)  | <p><b>Dapat melengkapkan Rajah 7.1.</b></p> <p><b>Jawapan:</b></p> <p>(Diversiti) genetik</p> <p><i>Genetic (diversity)</i></p>                                                                                                                                                                                                                                                     | <p>1</p> <p>1</p> |
| (a)(ii) | <p><b>Dapat menyatakan satu contoh diversiti ekosistem.</b></p> <p><b>Jawapan:</b></p> <p>Laut // Padang pasir // Paya bakau // Hutan</p>                                                                                                                                                                                                                                           | <p>1</p> <p>1</p> |
| (b)(i)  | <p><b>Dapat menerangkan kaedah yang dapat digunakan untuk menentukan kedua-dua spesies ikan ini adalah daripada spesies yang sama atau spesies yang berlainan.</b></p> <p><b>Jawapan:</b></p> <p>P1: Ikan jantan dan ikan betina daripada kedua-dua spesies diambil dan dibiarkan bersama-sama</p> <p><i>Male and female fish from both species are taken and left together</i></p> | <p>3</p> <p>1</p> |

|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                              |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
|         | <p>P2: Sekiranya kedua-dua jantina berlainan daripada kedua-dua spesies boleh saling membiak, ikan itu berasal dari spesies yang sama<br/> <i>If males and females from the two different species are able to interbreed, the fish belong to the same species</i></p> <p>P3: Jika kedua-dua jantina berlainan daripada kedua-dua spesies tidak boleh saling membiak, maka ikan itu daripada spesies berlainan<br/> <i>If males and females from the two different species are unable to interbreed, then the fish belong to different species</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>1</p> <p>1</p>                            |
| (b)(ii) | <p><b>Dapat membincangkan kepentingan Program Pelan Pembangunan Baka dan Benih Akuakultur oleh Kementerian Pertanian dan Keterjaminan Makanan dalam membantu meningkatkan bilangan kedua-dua spesies ikan Patin yang semakin diancam kekurangan.</b><br/> <b>Jawapan:</b><br/> P1: Program pembiakan (dapat meningkatkan bilangan anak ikan) melalui pembiakan terancang<br/> <i>The breeding programme (can increase the number of fish offspring) through planned breeding</i></p> <p>P2: Membantu memelihara baka tulen ikan Patin daripada ancaman / dimakan oleh ikan larangan // mengelakkan kepupusan spesies ikan Patin tempatan<br/> <i>Helps preserve the pure breed of Patin fish from threats / being eaten by invasive fish species // Prevents the extinction of local Patin fish species</i></p> <p>P3: Persaingan terhadap makanan / habitat / tempat pembiakan daripada spesies ikan larangan dapat dikurangkan<br/> <i>Competition for food / habitat / breeding sites from invasive fish species can be reduced</i></p> <p>P4: Kepelbagaian genetik ikan Patin dapat dikekalkan<br/> <i>The genetic diversity of Patin fish can be maintained</i></p> <p style="text-align: right;"><b>Maksimum 2</b></p> | <p>2</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> |
| (c)     | <p><b>Dapat menerangkan tindakan yang sepatutnya diambil oleh pengendali makanan semasa proses penyediaan gulai ayam tersebut bagi mengelakkan kejadian ini daripada berlaku.</b><br/> <b>Jawapan:</b><br/> Rubrik :<br/> F1 : Kaedah memasak<br/> F2 : Kebersihan pengendali makanan<br/> F3 : Kebersihan alatan memasak</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p>2</p> <p>1</p>                            |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                              |
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|  | <p>F1: Memasak daging ayam tersebut sehingga masak sepenuhnya pada suhu tinggi (melebihi 75°C)<br/> <i>Cook the chicken thoroughly until it is fully cooked at a high temperature (above 75°C)."</i></p> <p>P1:(Suhu yang tinggi) membunuh bakteria <i>Salmonella</i> sp. / memusnahkan struktur protein sel bakteria<br/> <i>(High temperature) kills Salmonella sp. bacteria / denatures the protein structure of the bacterial cells</i></p> <p>Atau</p> <p>F2: Menjaga kebersihan diri / tangan pengendali makanan (seperti mencuci tangan dengan sabun sebelum mengendalikan hidangan)<br/> <i>Maintain personal / food handler's hygiene (such as washing hands with soap before handling meals / food)</i></p> <p>P2: Memastikan tiada pemindahan patogen daripada tangan ke dalam masakan yang telah dimasak<br/> <i>Ensure there is no transfer of pathogens from hands into the cooked food</i></p> <p>Atau</p> <p>F3: Menggunakan papan pemotong / pisau yang berbeza<br/> <i>Use different cutting boards / knives</i></p> <p>P3: mengelakkan pencemaran silang antara daging ayam mentah dengan bahan masakan lain.<br/> <i>to avoid cross-contamination between the raw chicken and other cooking ingredients</i></p> <p style="text-align: right;"><b>Mana-mana F dan P yang sepadan</b></p> | <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> |
|  | <b>JUMLAH</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>9</b>                                     |

SKEMA SOALAN 8

| No 8                                                                                                                                | Cadangan Jawapan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Markah                                                                                                                             |   |                                       |                                                                                                                                    |                                                                                                                                     |                                                                                                                                                                                          |                |
|-------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|---|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| (a)                                                                                                                                 | <b>Dapat menerangkan bagaimana sisa kumbahan itu boleh memusnahkan habitat akuatik tersebut.</b><br><b>Jawapan:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>2</b>                                                                                                                           |   |                                       |                                                                                                                                    |                                                                                                                                     |                                                                                                                                                                                          |                |
|                                                                                                                                     | <table><tr><th>F</th><th>P</th></tr><tr><td>Air tercemar<br/><i>Polluted water</i></td><td>Mengurangkan oksigen terlarut //<br/>Meningkatkan nilai BOD<br/><i>Reduces dissolved oxygen //</i><br/><i>Increases the BOD value</i></td></tr><tr><td>Air panas / sisa nutrien yang tinggi<br/>/ nitrogen / fosforus<br/><i>Hot water / high nutrient waste /<br/>nitrogen / phosphorus</i></td><td>Meningkatkan suhu air //<br/>Peningkatan pertumbuhan alga //<br/>Eutrofikasi<br/><i>Increase the water temperature //<br/>Increase in algae growth // algal<br/>bloom // Eutrophication</i></td></tr></table> | F                                                                                                                                  | P | Air tercemar<br><i>Polluted water</i> | Mengurangkan oksigen terlarut //<br>Meningkatkan nilai BOD<br><i>Reduces dissolved oxygen //</i><br><i>Increases the BOD value</i> | Air panas / sisa nutrien yang tinggi<br>/ nitrogen / fosforus<br><i>Hot water / high nutrient waste /<br/>nitrogen / phosphorus</i> | Meningkatkan suhu air //<br>Peningkatan pertumbuhan alga //<br>Eutrofikasi<br><i>Increase the water temperature //<br/>Increase in algae growth // algal<br/>bloom // Eutrophication</i> | 1+1<br><br>1+1 |
|                                                                                                                                     | F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | P                                                                                                                                  |   |                                       |                                                                                                                                    |                                                                                                                                     |                                                                                                                                                                                          |                |
|                                                                                                                                     | Air tercemar<br><i>Polluted water</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Mengurangkan oksigen terlarut //<br>Meningkatkan nilai BOD<br><i>Reduces dissolved oxygen //</i><br><i>Increases the BOD value</i> |   |                                       |                                                                                                                                    |                                                                                                                                     |                                                                                                                                                                                          |                |
| Air panas / sisa nutrien yang tinggi<br>/ nitrogen / fosforus<br><i>Hot water / high nutrient waste /<br/>nitrogen / phosphorus</i> | Meningkatkan suhu air //<br>Peningkatan pertumbuhan alga //<br>Eutrofikasi<br><i>Increase the water temperature //<br/>Increase in algae growth // algal<br/>bloom // Eutrophication</i>                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                    |   |                                       |                                                                                                                                    |                                                                                                                                     |                                                                                                                                                                                          |                |
| <b>Mana-mana F dan P yang sepadan</b>                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                    |   |                                       |                                                                                                                                    |                                                                                                                                     |                                                                                                                                                                                          |                |
| (b)                                                                                                                                 | <b>Dapat menerangkan satu kaedah semulajadi yang boleh meningkatkan kualiti air kolam tersebut.</b><br><b>Jawapan:</b><br>P1: Fitoremediasi // Bioremediasi // Zooremediasi<br><i>Phytoremediation // Bioremediation // Zooremediation</i><br>P2: Menggunakan tumbuhan / mikroorganisma / haiwan untuk degradasi<br>/ pengekstrakkan / penyingkiran / mengurai bahan pencemar dalam<br>air<br><i>Using plant / microorganisms / animals for degradation / extraction /<br/>elimination / break down / decomposition of pollute substances from<br/>water</i>                                                  | <b>2</b><br><br>1<br><br>1                                                                                                         |   |                                       |                                                                                                                                    |                                                                                                                                     |                                                                                                                                                                                          |                |
| (c)                                                                                                                                 | <b>Dapat mencadangkan dua kaedah yang boleh dilakukan di peringkat domestik untuk menyokong matlamat tersebut untuk mendapatkan air bersih dan sanitasi yang baik.</b><br><b>Jawapan:</b><br>F1: Menggunakan penapis / mendidihkan air<br><i>Use a filter / boil water</i>                                                                                                                                                                                                                                                                                                                                    | <b>3</b><br><br>1                                                                                                                  |   |                                       |                                                                                                                                    |                                                                                                                                     |                                                                                                                                                                                          |                |

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|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
|     | <p>P1: Memastikan air minuman bersih dan selamat<br/><i>Ensure drinking water are safe and clean</i></p> <p>F2: Menyelenggarakan tangki septik secara berkala<br/><i>Maintain septic tanks regularly</i></p> <p>P2: Untuk elakkan limpahan<br/><i>To avoid overflows</i></p> <p>F3: Elakkan membuang minyak masak / peluntur ke dalam sinki<br/><i>Avoid throwing cooking oil / bleach into sink</i></p> <p>P3: Elakkan penyumbatan longkang // Elakkan pencemaran air<br/><i>Avoid clogging the drains // Avoid water pollution</i></p> <p style="text-align: right;"><b>Maksimum 3</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> |
| (d) | <p><b>Dapat mencadangkan dua contoh kaedah yang boleh dilakukan untuk memulihara ekosistem tersebut dari aspek yang ditetapkan.</b></p> <p><b>Jawapan:</b></p> <p>(i) <b>in situ:</b></p> <p>Melarang tangkapan hidupan di paya bakau // penebangan pokok paya bakau // tidak membuang sampah // elakkan pencemaran<br/><i>Prohibit capture of mangrove wildlife // logging of mangrove trees // do not throw garbage // avoid pollution</i></p> <p>(terima apa-apa contoh yang mengekalkan hidupan akuatik / tumbuhan paya bakau di kawasan tersebut)</p> <p>(ii) <b>ex situ:</b></p> <p>Menyemai biji benih / anak pokok (paya bakau) di tapak semaian khas / membiakkan spesies yang terancam di pusat konservasi // bina ekosistem buatan paya bakau untuk hidupan paya bakau<br/><i>Sowing seeds / sapling (mangroves) in nurseries / breeding endangered speciec in conservation centres / build artificial mangrove ecosystems to mangrove wildlife</i></p> <p>(terima apa- apa contoh yang memelihara hidupan akuatik / tumbuhan paya bakau di luar kawasan tersebut)</p> | <p>2</p> <p>1</p> <p>1</p>                   |
|     | <b>JUMLAH</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>9</b>                                     |

BAHAGIAN B

Skema Soalan 9

| No 9 | Kriteria Pemarkahan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Markah                |   |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|---|
| (a)  | <p><b>Dapat mendefinisikan kedua-dua jenis sel tersebut.</b></p> <p><b>Jawapan:</b></p> <p>P1: Sel soma terhasil daripada proses mitosis<br/><i>Somatic cells are produced by mitosis process</i></p> <p>P2: Mempunyai bilangan kromosom yang diploid / dua set kromosom<br/><i>Have a diploid number of chromosomes / two sets of chromosomes</i></p> <p>P3: Sel gamet terhasil melalui proses meiosis<br/><i>Gamete cells are produced by the meiosis process</i></p> <p>P4: Mempunyai bilangan kromosom yang haploid / satu set kromosom<br/><i>Have a haploid number of chromosomes / one set of chromosomes</i></p> <p><b>Maksimum 3</b></p>                                                                                                                                            | 1<br>1<br>1<br>1      | 3 |
| (b)  | <p><b>Dapat menerangkan persamaan antara proses pembahagian sel L dan proses pembahagian sel M berdasarkan Rajah 9.2</b></p> <p><b>Jawapan:</b></p> <p>Kedua -dua proses<br/><i>Both processes</i></p> <p>P1: melibatkan kariokinesis<br/><i>involve karyokinesis</i></p> <p>P2: melibatkan sitokinesis<br/><i>involve cytokinesis</i></p> <p>P3: melibatkan replikasi DNA / penggandaan kromosom<br/><i>involve DNA replication / chromosomes duplication</i></p> <p>P4: pertambahan bilangan sel anak<br/><i>increase in the number of daughter cells</i></p> <p>P5: melibatkan turutan proses yang sama iaitu Profasa, Metafasa, Anafasa dan Telofasa<br/><i>involves the same sequence of processes, namely Prophase, Metaphase, Anaphase and Telophase</i></p> <p><b>Maksimum 4</b></p> | 1<br>1<br>1<br>1<br>1 | 4 |
| (c)  | <p><b>Dapat menghuraikan punca ketidaknormalan yang berlaku pada proses pembahagian sel L sehingga anak yang dilahirkan mempunyai penyakit genetik seperti mata sepet, lidah pendek dan kerencatan mental.</b></p> <p><b>Jawapan:</b></p> <p>P1: Gentian gelendong gagal berfungsi / tidak terbentuk<br/><i>Spindle fibre fails to function / fail to form</i></p> <p>P2: semasa Anafasa I / Anafasa II<br/><i>During Anaphase I / Anaphase II</i></p>                                                                                                                                                                                                                                                                                                                                       | 1<br>1                | 5 |

| No 9 | Kriteria Pemarkahan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Markah                                       |          |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|----------|
|      | <p>P3: Kromosom homolog / kromatid kembar tidak berpisah / tak disjungsi<br/> <i>Homologous chromosomes / sister chromatids do not separate / nondisjunction</i></p> <p>P4: Sperma mempunyai 24 kromosom / lebih satu kromosom autosom pada nombor ke 21<br/> <i>Sperm has 24 chromosomes / excessive one autosome at 21<sup>st</sup> chromosomes</i></p> <p>P5: Persenyawaan dengan ovum (normal)<br/> <i>Fertilization with ovum</i></p> <p>P6: Menghasilkan zigot yang mempunyai 47 kromosom / trisomy<br/> <i>Produces a zygote that has 47 chromosomes / trisomy</i></p> <p>P7: Mengidap Sindrom Down<br/> <i>Has Syndrome Down</i></p> <p style="text-align: right;"><b>Maksimum 5</b></p> | <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> |          |
| (d)  | <p><b>Dapat menerangkan bagaimana perbezaan warna kulit pada kembar seiras tersebut boleh berlaku.</b></p> <p><b>Jawapan:</b></p> <p>P1: P terdedah pada keamatan cahaya lebih lama / tinggi<br/> <i>P is exposed to longer / higher light intensity</i></p> <p>P2: Cahaya matahari mengandungi sinar ultraungu<br/> <i>Sunlight contains ultraviolet rays</i></p> <p>P3: Merosakkan melanin // merangsangkan melanosit // lebih banyak pigmen melanin terbentuk<br/> <i>Damage melanin // stimulates melanocytes // more melanin pigment is formed</i></p> <p style="text-align: right;"><b>Maksimum 2</b></p>                                                                                  | <p>1</p> <p>1</p> <p>1</p>                   | <b>2</b> |
| (e)  | <p><b>Dapat membanding bezakan dua jenis variasi tersebut berdasarkan Rajah 9.4.</b></p> <p><b>Jawapan:</b></p> <p><u>Persamaan</u><br/> <u>Similarities</u></p> <p>F1: Kedua-duanya menunjukkan perbezaan ciri pada individu yang sama spesies<br/> <i>Both shows differences in characteristics in individuals of the same species</i></p> <p>F2: Kedua-duanya dipengaruhi oleh faktor genetik<br/> <i>Both are influenced by genetic factors</i></p>                                                                                                                                                                                                                                          | <p>1</p> <p>1</p>                            | <b>6</b> |

| No 9                                                                                                | Kriteria Pemarkahan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Markah                            |                                   |                                                        |                                                 |                                                                                                     |                                                                                                |                                                                 |                                                                       |                                                                        |                                                            |                                                                                              |                                                                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|                                                                                                     | <p><u>Perbezaan:</u></p> <p><u>Differences:</u></p> <table><tr><th>Ciri X<br/><i>Characteristic X</i></th><th>Ciri Y<br/><i>Characteristic Y</i></th></tr><tr><td>Variasi tak selanjar<br/><i>Discontinuous variation</i></td><td>Variasi selanjar<br/><i>Continuous variation</i></td></tr><tr><td>Perbezaaan ciri yang jelas dan ketara<br/><i>Obvious and distinct differences in characteristics</i></td><td>Menunjukkan ciri yang tidak jelas / ketara<br/><i>No obvious differences in characteristics</i></td></tr><tr><td>Tiada ciri perantaraan<br/><i>No intermediate characteristic</i></td><td>Mempunyai ciri perantaraan<br/><i>Have intermediate characteristic</i></td></tr><tr><td>Dikawal oleh satu gen tunggal<br/><i>Controlled by one single genes</i></td><td>Dikawal oleh banyak gen<br/><i>Controlled by many genes</i></td></tr><tr><td>Tidak dipengaruhi oleh faktor persekitaran<br/><i>Not influenced by environmental factors</i></td><td>Dipengaruhi oleh faktor persekitaran<br/><i>Influenced by environmental factors</i></td></tr></table> <p>Minimum 1 persamaan dan Maksimum 5 perbezaan</p> | Ciri X<br><i>Characteristic X</i> | Ciri Y<br><i>Characteristic Y</i> | Variasi tak selanjar<br><i>Discontinuous variation</i> | Variasi selanjar<br><i>Continuous variation</i> | Perbezaaan ciri yang jelas dan ketara<br><i>Obvious and distinct differences in characteristics</i> | Menunjukkan ciri yang tidak jelas / ketara<br><i>No obvious differences in characteristics</i> | Tiada ciri perantaraan<br><i>No intermediate characteristic</i> | Mempunyai ciri perantaraan<br><i>Have intermediate characteristic</i> | Dikawal oleh satu gen tunggal<br><i>Controlled by one single genes</i> | Dikawal oleh banyak gen<br><i>Controlled by many genes</i> | Tidak dipengaruhi oleh faktor persekitaran<br><i>Not influenced by environmental factors</i> | Dipengaruhi oleh faktor persekitaran<br><i>Influenced by environmental factors</i> | 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| Ciri X<br><i>Characteristic X</i>                                                                   | Ciri Y<br><i>Characteristic Y</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                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| Variasi tak selanjar<br><i>Discontinuous variation</i>                                              | Variasi selanjar<br><i>Continuous variation</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| Perbezaaan ciri yang jelas dan ketara<br><i>Obvious and distinct differences in characteristics</i> | Menunjukkan ciri yang tidak jelas / ketara<br><i>No obvious differences in characteristics</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   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| Tiada ciri perantaraan<br><i>No intermediate characteristic</i>                                     | Mempunyai ciri perantaraan<br><i>Have intermediate characteristic</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            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| Dikawal oleh satu gen tunggal<br><i>Controlled by one single genes</i>                              | Dikawal oleh banyak gen<br><i>Controlled by many genes</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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| Tidak dipengaruhi oleh faktor persekitaran<br><i>Not influenced by environmental factors</i>        | Dipengaruhi oleh faktor persekitaran<br><i>Influenced by environmental factors</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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#### Skema Soalan 10

| No 10  | Kriteria Pemarkahan                                                                                                                                                                                                                                                                                                                                                                           | Markah |   |
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| (a)(i) | <p><b>Dapat menerangkan proses S berdasarkan Rajah 10.1.</b></p> <p><b>Jawapan:</b></p> <p>P1: Proses pendebungaan / pemindahan debunga / gamet jantan<br/><i>Pollination / pollen / male gamete transfer process</i></p> <p>P2: dari anter ke stigma<br/><i>from anther to stigma</i></p> <p>P3: melalui agen pendebungaan<br/><i>through pollination agent</i></p> <p><b>Maksimum 2</b></p> | 1      | 2 |

| No 10               | Kriteria Pemarkahan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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|                     | <i>located at the same flower</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                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|                     | <table> <tr> <th></th> <th>Struktur M<br/><i>Structure M</i></th> <th>Struktur N<br/><i>Structure N</i></th> </tr> <tr> <td>P1</td> <td>Stamen / Struktur pembiakan Jantan<br/><i>Stamen / Male reproductive structure</i></td> <td>Karpel / Pistil / Struktur pembiakan betina<br/><i>Carpel / Pistil / Female reproductive structure</i></td> </tr> <tr> <td>P2</td> <td>Terdiri daripada anter dan filamen<br/><i>Consists of anther and filament</i></td> <td>Terdiri daripada stigma, stil dan ovari<br/><i>Consists of stigma, style and ovary</i></td> </tr> <tr> <td>P3</td> <td>Anter mengandungi debunga<br/><i>Anther contain pollen</i></td> <td>Ovari mengandungi ovul<br/><i>Ovary contain ovule</i></td> </tr> <tr> <td>P4</td> <td>Pundi debunga mengandungi sel induk debunga / mikrospora<br/><i>Pollen sacs contain pollen mother cells / microspore</i></td> <td>Ovul mengandungi sel induk pundi embrio / megaspora<br/><i>Ovule contain embryo sac mother cells / megaspore</i></td> </tr> <tr> <td>P5</td> <td>Mengunjur keluar dari dasar ovari / bunga<br/><i>Projecting from the base of the ovary / flower</i></td> <td>Terletak di bahagian tengah bunga<br/><i>Located in the middle part of the flower</i></td> </tr> </table> |                                                                                                                 | Struktur M<br><i>Structure M</i> | Struktur N<br><i>Structure N</i> | P1 | Stamen / Struktur pembiakan Jantan<br><i>Stamen / Male reproductive structure</i> | Karpel / Pistil / Struktur pembiakan betina<br><i>Carpel / Pistil / Female reproductive structure</i> | P2 | Terdiri daripada anter dan filamen<br><i>Consists of anther and filament</i> | Terdiri daripada stigma, stil dan ovari<br><i>Consists of stigma, style and ovary</i> | P3 | Anter mengandungi debunga<br><i>Anther contain pollen</i> | Ovari mengandungi ovul<br><i>Ovary contain ovule</i> | P4 | Pundi debunga mengandungi sel induk debunga / mikrospora<br><i>Pollen sacs contain pollen mother cells / microspore</i> | Ovul mengandungi sel induk pundi embrio / megaspora<br><i>Ovule contain embryo sac mother cells / megaspore</i> | P5 | Mengunjur keluar dari dasar ovari / bunga<br><i>Projecting from the base of the ovary / flower</i> | Terletak di bahagian tengah bunga<br><i>Located in the middle part of the flower</i> | 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| P1                  | Stamen / Struktur pembiakan Jantan<br><i>Stamen / Male reproductive structure</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                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| P2                  | Terdiri daripada anter dan filamen<br><i>Consists of anther and filament</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     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| P3                  | Anter mengandungi debunga<br><i>Anther contain pollen</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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| P4                  | Pundi debunga mengandungi sel induk debunga / mikrospora<br><i>Pollen sacs contain pollen mother cells / microspore</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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| P5                  | Mengunjur keluar dari dasar ovari / bunga<br><i>Projecting from the base of the ovary / flower</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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|       | <p>Kedua-duanya:</p> <p><i>Both:</i></p> <p>S1 : Bermula dengan sel induk yang diploid / 2n // Terlibat dalam penghasilan gamet haploid<br/> <i>Start with diploid mother cell / 2n // involved in haploid gamete production</i></p> <p>S2 : melibatkan proses meiosis<br/> <i>involve meiosis process</i></p> <p>S3 : melibatkan proses mitosis<br/> <i>involve mitosis process</i></p> <p><u>Perbezaan:</u></p> <p><u>Differences:</u></p> <table border="1"> <thead> <tr> <th></th><th>Q</th><th>R</th></tr> </thead> <tbody> <tr> <td>P1</td><td>Menghasilkan butir debunga / mikrospora / gamet jantan<br/> <i>Development process of pollen grain / microspore / male gamete</i></td><td>Menghasilkan pundi embrio / megaspore / gamet betina<br/> <i>Development process of embryo sac / megaspore / female gamete</i></td></tr> <tr> <td>P2</td><td>Sel induk mikrospora / debunga menjalani (meiosis)<br/> <i>The microspore / pollen mother cell undergoes (meiosis).</i></td><td>Sel induk megaspore / pundi embrio menjalani (meiosis)<br/> <i>The megaspore / embryo sac mother cell undergoes (meiosis)</i></td></tr> <tr> <td>P3</td><td>4 sel mikrospora / tetrad berkembang<br/> <i>4 microspore / tetrad cells develop</i></td><td>3 sel megaspore merosot manakala 1 megaspore berkembang<br/> <i>3 megaspore cells degenerate while 1 megaspore cell develops</i></td></tr> <tr> <td>P4</td><td>Nukleus dalam debunga membahagi secara mitosis sekali sahaja<br/> <i>The nucleus in pollen divides mitotically only once</i></td><td>Nukleus dalam sel megaspore membahagi secara mitosis sebanyak tiga kali<br/> <i>The nucleus in megaspore cell divides mitotically three times</i></td></tr> <tr> <td>P5</td><td>Dua nukleus dihasilkan<br/> <i>Two nuclei are produced</i><br/> <b>Terima:</b> 1 nukleus penjana <u>dan</u> 1 nukleus tiub</td><td>Lapan nukleus dihasilkan<br/> <i>Eight nuclei are produced</i><br/> <b>Terima:</b> 1 sel telur, 2 sel sinergid, 3 sel antipodal, 2 nukleus kutub</td></tr> </tbody> </table> |                                                                                                                                                 | Q | R | P1 | Menghasilkan butir debunga / mikrospora / gamet jantan<br><i>Development process of pollen grain / microspore / male gamete</i> | Menghasilkan pundi embrio / megaspore / gamet betina<br><i>Development process of embryo sac / megaspore / female gamete</i> | P2 | Sel induk mikrospora / debunga menjalani (meiosis)<br><i>The microspore / pollen mother cell undergoes (meiosis).</i> | Sel induk megaspore / pundi embrio menjalani (meiosis)<br><i>The megaspore / embryo sac mother cell undergoes (meiosis)</i> | P3 | 4 sel mikrospora / tetrad berkembang<br><i>4 microspore / tetrad cells develop</i> | 3 sel megaspore merosot manakala 1 megaspore berkembang<br><i>3 megaspore cells degenerate while 1 megaspore cell develops</i> | P4 | Nukleus dalam debunga membahagi secara mitosis sekali sahaja<br><i>The nucleus in pollen divides mitotically only once</i> | Nukleus dalam sel megaspore membahagi secara mitosis sebanyak tiga kali<br><i>The nucleus in megaspore cell divides mitotically three times</i> | P5 | Dua nukleus dihasilkan<br><i>Two nuclei are produced</i><br><b>Terima:</b> 1 nukleus penjana <u>dan</u> 1 nukleus tiub | Lapan nukleus dihasilkan<br><i>Eight nuclei are produced</i><br><b>Terima:</b> 1 sel telur, 2 sel sinergid, 3 sel antipodal, 2 nukleus kutub | <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> |
|       | Q                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | R                                                                                                                                               |   |   |    |                                                                                                                                 |                                                                                                                              |    |                                                                                                                       |                                                                                                                             |    |                                                                                    |                                                                                                                                |    |                                                                                                                            |                                                                                                                                                 |    |                                                                                                                        |                                                                                                                                              |                                                                |
| P1    | Menghasilkan butir debunga / mikrospora / gamet jantan<br><i>Development process of pollen grain / microspore / male gamete</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Menghasilkan pundi embrio / megaspore / gamet betina<br><i>Development process of embryo sac / megaspore / female gamete</i>                    |   |   |    |                                                                                                                                 |                                                                                                                              |    |                                                                                                                       |                                                                                                                             |    |                                                                                    |                                                                                                                                |    |                                                                                                                            |                                                                                                                                                 |    |                                                                                                                        |                                                                                                                                              |                                                                |
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| P3    | 4 sel mikrospora / tetrad berkembang<br><i>4 microspore / tetrad cells develop</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3 sel megaspore merosot manakala 1 megaspore berkembang<br><i>3 megaspore cells degenerate while 1 megaspore cell develops</i>                  |   |   |    |                                                                                                                                 |                                                                                                                              |    |                                                                                                                       |                                                                                                                             |    |                                                                                    |                                                                                                                                |    |                                                                                                                            |                                                                                                                                                 |    |                                                                                                                        |                                                                                                                                              |                                                                |
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| P5    | Dua nukleus dihasilkan<br><i>Two nuclei are produced</i><br><b>Terima:</b> 1 nukleus penjana <u>dan</u> 1 nukleus tiub                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Lapan nukleus dihasilkan<br><i>Eight nuclei are produced</i><br><b>Terima:</b> 1 sel telur, 2 sel sinergid, 3 sel antipodal, 2 nukleus kutub    |   |   |    |                                                                                                                                 |                                                                                                                              |    |                                                                                                                       |                                                                                                                             |    |                                                                                    |                                                                                                                                |    |                                                                                                                            |                                                                                                                                                 |    |                                                                                                                        |                                                                                                                                              |                                                                |

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|       | P7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             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| (c)   | <b>Dapat menerangkan kepentingan biji benih untuk kemandirian spesies pokok durian.</b><br><b>Jawapan:</b><br>P1 : Biji benih mengandungi tisu endosperma / kotiledon<br><i>Seed contains endosperm tissue / cotyledons</i><br>P2 : Membekalkan nutrien / tenaga kepada embrio semasa percambahan<br><i>Provide nutrient / energy to embryo during germination</i><br>P3 : Biji benih diselaputi oleh testa yang kuat / keras / kalis air / struktur dorman<br><i>Seeds are covered by a strong / hard / waterproof / dormant structure</i><br>P4 : Elak biji benih daripada rosak // boleh disimpan lama<br><i>Prevents seed from damage // can be stored for a long time</i><br>P5 : Mengandungi embrio // untuk membiak<br><i>Contains embryo // to reproduce</i><br>P6 : Bercambah menjadi anak benih // menambah bilangan pokok durian<br><i>Germinate into seedlings // to increase number of durian tree</i><br>P7 : Biji benih diselaputi oleh buah<br><i>Seeds are covered by fruit</i><br>P8 : Mudah disebar / dipencarkan<br><i>Easy to spread / disperse</i><br>P9: Biji benih membawa maklumat genetik // variasi genetik<br><i>Seeds carry genetic information // genetic variation</i><br>P10: Diturunkan dari satu generasi ke generasi berikutnya // untuk beradaptasi dengan perubahan persekitaran<br><i>Inherited from one generation to the next // to adapt to environmental changes</i><br><br><b>Maksimum 4</b> |                                                                          |                                                              |   | 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| No 10 | Kriteria Pemarkahan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Markah                                                                                    |           |
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| (d)   | <p><b>Dapat menerangkan teknik X dan kesan negatif yang mungkin timbul hasil penggunaan teknik tersebut.</b></p> <p><b>Jawapan:</b></p> <p>Rubrik :</p> <p>P1 – P5 : Teknik X</p> <p>P6 – P10 : Kesan negatif teknik X</p> <p>P1: Partenokarpi<br/><i>Parthenocarpy</i></p> <p>P2: Menggunakan fitohormon / Auksin<br/><i>Using phythormone / Auxin</i></p> <p>P3: Bunga yang belum didebungakan // ovari / stigma disembur dengan auksin<br/><i>Unpollinated flowers // ovary / stigma are sprayed with auxin</i></p> <p>P4: Ovari berkembang menjadi buah tanpa biji benih<br/><i>Ovary develop into seedless fruit</i></p> <p>P5: tanpa persenyawaan (ganda dua)<br/><i>without (double) fertilization</i></p> <p>P6: Kurang pembiakan secara semulajadi // tidak melibatkan gamet jantan dan gamet betina secara rawak // tiada biji benih<br/><i>Less natural reproduction // does not involve male and female gametes randomly // no seeds are produced</i></p> <p>P7: Kurang variasi genetik<br/><i>Less genetic variation</i></p> <p>P8: Meningkatkan kos pengeluaran / kebergantungan kepada hormon<br/><i>Increasing production costs / dependence on hormones</i></p> <p>P9: Kualiti baik pokok induk tidak dapat diwarisi secara semulajadi<br/><i>The good qualities of the parent tree cannot be inherited naturally</i></p> <p>P10: Spesies buah akan pupus (selepas jangka masa lama)<br/><i>Fruit species will become extinct (after a long period of time).</i></p> <p><b>Nota:</b> P1/P2/P3/P4/P5 – Maksimum 2 markah<br/>P6/P7/P8/P9/P10 – Maksimum 2 markah</p> | <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> | 4         |
|       | <b>JUMLAH</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                           | <b>20</b> |

<https://t.me/cikgufazliebiosensei>



BAHAGIAN C

Skema Soalan 11

| No 11   | Kriteria Pemarkahan                                                                                                                                                                  | Markah |          |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------|
| (a)(i)  | <b>Dapat menerangkan peranan hati dalam pencernaan kelas makanan X di duodenum.</b>                                                                                                  |        | <b>3</b> |
|         | <b>Jawapan:</b>                                                                                                                                                                      |        |          |
|         | P1: Hati menghasilkan (garam) hempedu<br><i>Liver produces bile (salts)</i>                                                                                                          | 1      |          |
|         | P2: Hempedu disalurkan ke duodenum (melalui duktus hempedu)<br><i>Bile is channelled out into the duodenum (via bile duct)</i>                                                       | 1      |          |
|         | P3: Menyediakan medium beralkali di duodenum // Meneutralkan kim yang berasid dari perut<br><i>Provides alkaline medium in duodenum // Neutralises the acidic Chyme from stomach</i> | 1      |          |
|         | P4: Mengemulsikan lipid / memecahkan lipid kepada titisan-titisan halus lipid<br><i>Emulsifies lipid / breaking down into tiny droplets</i>                                          | 1      |          |
|         | P5: Menambahkan jumlah luas permukaan<br><i>Increases total surface area</i>                                                                                                         | 1      |          |
|         | P6: Mempercepatkan pencernaan lipid<br><i>Speed up digestion of lipid</i>                                                                                                            |        |          |
|         | <b>Maksimum 3</b>                                                                                                                                                                    |        |          |
| (a)(ii) | <b>Dapat membincangkan kesan masalah hati berlemak terhadap proses asimilasi makanan tercerna dalam hati.</b>                                                                        |        | <b>7</b> |
|         | <b>Jawapan:</b>                                                                                                                                                                      |        |          |
|         | <u>Rubrik asimilasi asid amino – sekurang-kurangnya 1</u>                                                                                                                            |        |          |
|         | A1: Kurang / Tiada sintesis protein plasma / enzim<br><i>Less / No synthesis of plasma protein / enzyme</i>                                                                          | 1      |          |
|         | A2: Pendeaminan sedikit / tidak berlaku // asid amino berlebihan tidak dapat ditukarkan kepada urea<br><i>Less / No deamination // excess amino acid cannot turn into urea</i>       | 1      |          |
|         | A3: Asid amino berlebihan dalam badan<br><i>Excess amino acid in the body</i>                                                                                                        | 1      |          |
|         | A4: (Apabila glukosa tidak mencukupi), asid amino tidak dapat ditukarkan kepada glukosa<br><i>(When glucose is insufficient), amino acid cannot be converted into glucose</i>        | 1      |          |
|         | <u>Rubrik asimilasi glukosa – sekurang-kurangnya 1</u>                                                                                                                               |        |          |
|         | G1: Kurang / Tiada glukosa berlebihan ditukarkan kepada glikogen<br><i>Less / no excess glucose is converted into glycogen</i>                                                       | 1      |          |
|         | G2: Kurang / Tiada glikogen tersimpan di hati<br><i>Less / no glycogen is stored in the liver</i>                                                                                    | 1      |          |
|         | G3: Kurang / Tiada glukosa berlebihan ditukarkan kepada lemak<br><i>Less / no excess glucose is converted into fat</i>                                                               | 1      |          |
|         | G4: (Bila aras glukosa dalam darah menurun), kurang / tiada glikogen                                                                                                                 |        |          |

| No 11 | Kriteria Pemarkahan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Markah                              |                 |
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|       | <p>ditukarkan kepada glukosa<br/>(<i>When the blood glucose level decreases</i>), less / no glycogen is converted into glucose</p> <p><u>Rubrik penyimpanan nutrien – sekurang-kurangnya 1</u></p> <p>N1: Tidak menyerap / menyimpan vitamin A / D / E / K / B12 / kolesterol / kuprum / zat besi<br/><i>Does not absorb / store vitamin A / D / E / K / B12 / cholesterol / copper / iron</i></p> <p>N2: Merangsang enapan kolesterol dalam (dinding) arteri<br/><i>Stimulates cholesterol deposition in the (walls of the) arteries</i></p> <p>N3: Hati tidak dapat mengawalatur jumlah nutrien yang masuk ke dalam sistem peredaran darah<br/><i>The liver cannot regulate the amount of nutrients entering the circulatory system</i></p> <p style="text-align: right;"><b>Maksimum 7</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p>1</p> <p>1</p> <p>1</p> <p>1</p> |                 |
| (b)   | <p><b>Dapat mewajarkan bagaimana saranan kesihatan tersebut dapat menyumbang kepada pemulihan kesihatan pesakit tersebut.</b><br/><b>Jawapan:</b></p> <p>P1: <b>Pengambilan buah-buahan dan sayur-sayuran berdaun hijau</b><br/>Membekalkan vitamin / mineral / serat yang penting untuk meningkatkan sistem imun / kesihatan tubuh<br/><b><i>The intake of fruits and green leafy vegetables</i></b><br/><i>Provides vitamins / minerals / fibre that are important for improving the immune system / body health</i></p> <p>P2: <b>Makanan berkalori tinggi yang sihat</b><br/>Membantu menambah berat badan secara beransur-ansur // Membekalkan tenaga mencukupi // Mengelakkan kekurangan zat makanan/malnutrisi<br/><b><i>Healthy high-calorie foods</i></b><br/><i>Help increase body weight gradually // Provide sufficient energy // prevent malnutrition</i></p> <p>P3: <b>Kaunseling dan pemeriksaan berkala</b><br/>Membantu pesakit menangani masalah emosi / psikologi (seperti ketakutan terhadap makanan / berat badan) // membolehkan pemantauan kesihatan dilakukan secara konsisten / berterusan<br/><b><i>Counselling and regular check-ups</i></b><br/><i>Help patients overcome emotional / psychological problems (such as fear of food / body weight) // Allow health monitoring to be carried out consistently / continuously</i></p> <p>P4: <b>Penyediaan makanan yang menarik dari segi bentuk dan warna</b><br/>Dapat merangsang selera makan // menggalakkan pengambilan makanan yang mencukupi // mengatasi masalah kurang selera makan<br/><b><i>The preparation of food in attractive shapes and colours</i></b></p> | <p>1</p> <p>1</p> <p>1</p> <p>1</p> | <p><b>4</b></p> |

| No 11                                                                                                                                          | Kriteria Pemarkahan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   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|                                                                                                                                                | <i>Can stimulate appetite // Encourage sufficient food intake // Overcome the problem of poor appetite</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            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| (c)                                                                                                                                            | <p><b>Dapat mencadangkan dan menerangkan menu makan tengahari yang sesuai untuk diambil oleh Puan S untuk menjamin kesihatan beliau.</b></p> <p><b>Jawapan:</b></p> <p>Rubrik :</p> <p>C1 : Karbohidrat</p> <p>C2 – C3 : Protein</p> <p>C4 -C5 : Pelawas</p> <table><tr><th>Cadangan menu (C)</th><th>Penerangan (P)</th></tr><tr><td>C1: Nasi perang (1/2–1 cawan)<br/><i>Brown rice (1/2–1 cup)</i></td><td>P1: Membekalkan karbohidrat kompleks untuk tenaga berpanjangan // mengawal berat badan // mengurangkan tekanan pada lutut<br/><i>Provides complex carbohydrates for long-lasting energy // controls body weight // reduces pressure on the knees</i></td></tr><tr><td>C2: Ikan bakar / kukus // ayam panggang tanpa kulit / ayam kukus / stim<br/><i>Grilled / steamed fish // skinless grilled / steamed chicken</i></td><td>P2: Membekalkan protein (tanpa lemak berlebihan)<br/><i>Provides protein (without excessive fat)</i></td></tr><tr><td>C3: Ikan salmon / tenggiri kukus / stim (1 keping)<br/><i>Steamed salmon / mackerel (1 piece)</i></td><td>P6: Kaya dengan protein / asid lemak omega-3 yang membantu mengurangkan keradangan pada sendi<br/><i>Rich in protein / omega-3 fatty acids that help reduce inflammation in the joints</i></td></tr><tr><td>C4: Sayur campur // Sup sayur // Buah-buahan (segar)<br/><i>Mixed vegetables // Vegetable soup // (Fresh) fruits</i></td><td>P3: Kaya dengan serat / vitamin / mineral yang membantu penghadaman / meningkatkan sistem imun / kesihatan<br/><i>Rich in fibre / vitamins / minerals that help digestion // improve the immune system / health</i></td></tr></table> | Cadangan menu (C) | Penerangan (P) | C1: Nasi perang (1/2–1 cawan)<br><i>Brown rice (1/2–1 cup)</i> | P1: Membekalkan karbohidrat kompleks untuk tenaga berpanjangan // mengawal berat badan // mengurangkan tekanan pada lutut<br><i>Provides complex 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| Cadangan menu (C)                                                                                                                              | Penerangan (P)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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| C1: Nasi perang (1/2–1 cawan)<br><i>Brown rice (1/2–1 cup)</i>                                                                                 | P1: Membekalkan karbohidrat kompleks untuk tenaga berpanjangan // mengawal berat badan // mengurangkan tekanan pada lutut<br><i>Provides complex carbohydrates for long-lasting energy // controls body weight // reduces pressure on the knees</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   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| C2: Ikan bakar / kukus // ayam panggang tanpa kulit / ayam kukus / stim<br><i>Grilled / steamed fish // skinless grilled / steamed chicken</i> | P2: Membekalkan protein (tanpa lemak berlebihan)<br><i>Provides protein (without excessive fat)</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   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| C3: Ikan salmon / tenggiri kukus / stim (1 keping)<br><i>Steamed salmon / mackerel (1 piece)</i>                                               | P6: Kaya dengan protein / asid lemak omega-3 yang membantu mengurangkan keradangan pada sendi<br><i>Rich in protein / omega-3 fatty acids that help reduce inflammation in the joints</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             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| C4: Sayur campur // Sup sayur // Buah-buahan (segar)<br><i>Mixed vegetables // Vegetable soup // (Fresh) fruits</i>                            | P3: Kaya dengan serat / vitamin / mineral yang membantu penghadaman / meningkatkan sistem imun / kesihatan<br><i>Rich in fibre / vitamins / minerals that help digestion // improve the immune system / health</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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| No 11 | Kriteria Pemarkahan                                                                                                                                                                                          |                                                                                                                                   | Markah |           |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|--------|-----------|
|       | C5: Air kosong<br><i>Plain water</i>                                                                                                                                                                         | P5: Membantu mengekalkan hidrasi badan // merangsang peristalsis<br><i>Helps maintain body hydration // Stimulate peristalsis</i> |        |           |
|       | <p><b>Nota:</b> 1. Jawapan C dan P mesti sepadan</p> <p>2. Terima mana-mana menu yang difikirkan sesuai tetapi mesti mengandungi ketiga-tiga rubrik.</p> <p style="text-align: right;"><b>Maksimum 6</b></p> |                                                                                                                                   |        |           |
|       | <b>JUMLAH</b>                                                                                                                                                                                                |                                                                                                                                   |        | <b>20</b> |

<https://t.me/cikgufazliebiosensei>