

|                                | Skema pemarkahan<br>Answer scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Sub Markah                                                                     | Jum Markah                                                                                            |    |  |                                |    |                                                 |  |  |  |                                                                                |                                                                                                       |   |     |                        |                        |   |             |                        |                        |                     |   |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----|--|--------------------------------|----|-------------------------------------------------|--|--|--|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|---|-----|------------------------|------------------------|---|-------------|------------------------|------------------------|---------------------|---|
| 1(a)                           | <p>Dapat membina jadual keputusan yang mengandungi :<br/><i>Able to construct a table of results that contains:</i></p> <p><b>Kriteria:</b><br/><i>Criteria:</i></p> <p><b>P1: Tajuk dan data bagi pemboleh ubah dimanipulasi</b><br/><i>Titles and data for manipulated variables</i><br/>Tabung uji / <i>Test tubes</i> : P,Q<br/>pH : 1-2, 6-7</p> <p><b>P2 : Tajuk bagi pemboleh ubah bergerak balas</b><br/><i>Titles for responding variables</i><br/>Keadaan campuran / <i>Condition of mixture</i><br/>Awal eksperimen // 0 minit<br/><i>At the beginning of experiment// 0 minute</i><br/>Akhir eksperimen // Selepas 15 minit<br/><i>At the end of experiment // After 15 minutes</i></p> <p><b>P3 : Data untuk pemboleh ubah bergerak balas</b><br/><i>Data for responding variables</i><br/>4 betul / <i>correct - 2m</i><br/>3-2 betul / <i>correct – 1m</i><br/>0 – 1 betul / <i>correct – 0m</i></p> <p><b>Contoh jawapan:</b><br/><i>Sample answer:</i></p> <table border="1"> <thead> <tr> <th colspan="2">P1</th><th colspan="2">P2</th></tr> <tr> <th>Tabung uji<br/><i>Test tube</i></th><th>pH</th><th colspan="2">Keadaan campuran<br/><i>Condition of mixture</i></th></tr> </thead> <tbody> <tr> <td></td><td></td><td>Awal eksperimen // 0 minit<br/><i>At the beginning of experiment// 0 minute</i></td><td>Akhir eksperimen // Selepas 15 minit<br/><i>At the end of experiment //</i><br/><i>After 15 minutes</i></td></tr> <tr> <td>P</td><td>2.0</td><td>Keruh<br/><i>Cloudy</i></td><td>Jernih<br/><i>Clear</i></td></tr> <tr> <td>Q</td><td>6.0/<br/>7.0</td><td>Keruh<br/><i>Cloudy</i></td><td>Keruh<br/><i>Cloudy</i></td></tr> </tbody> </table> <p>Tolak : Warna larutan, cth: putih/ kelabu<br/><i>Reject : Colour of solution, cth: white/ grey</i></p> | P1                                                                             |                                                                                                       | P2 |  | Tabung uji<br><i>Test tube</i> | pH | Keadaan campuran<br><i>Condition of mixture</i> |  |  |  | Awal eksperimen // 0 minit<br><i>At the beginning of experiment// 0 minute</i> | Akhir eksperimen // Selepas 15 minit<br><i>At the end of experiment //</i><br><i>After 15 minutes</i> | P | 2.0 | Keruh<br><i>Cloudy</i> | Jernih<br><i>Clear</i> | Q | 6.0/<br>7.0 | Keruh<br><i>Cloudy</i> | Keruh<br><i>Cloudy</i> | 1<br><br>1<br><br>2 | 4 |
| P1                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | P2                                                                             |                                                                                                       |    |  |                                |    |                                                 |  |  |  |                                                                                |                                                                                                       |   |     |                        |                        |   |             |                        |                        |                     |   |
| Tabung uji<br><i>Test tube</i> | pH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Keadaan campuran<br><i>Condition of mixture</i>                                |                                                                                                       |    |  |                                |    |                                                 |  |  |  |                                                                                |                                                                                                       |   |     |                        |                        |   |             |                        |                        |                     |   |
|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Awal eksperimen // 0 minit<br><i>At the beginning of experiment// 0 minute</i> | Akhir eksperimen // Selepas 15 minit<br><i>At the end of experiment //</i><br><i>After 15 minutes</i> |    |  |                                |    |                                                 |  |  |  |                                                                                |                                                                                                       |   |     |                        |                        |   |             |                        |                        |                     |   |
| P                              | 2.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Keruh<br><i>Cloudy</i>                                                         | Jernih<br><i>Clear</i>                                                                                |    |  |                                |    |                                                 |  |  |  |                                                                                |                                                                                                       |   |     |                        |                        |   |             |                        |                        |                     |   |
| Q                              | 6.0/<br>7.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Keruh<br><i>Cloudy</i>                                                         | Keruh<br><i>Cloudy</i>                                                                                |    |  |                                |    |                                                 |  |  |  |                                                                                |                                                                                                       |   |     |                        |                        |   |             |                        |                        |                     |   |



|        | Skema pemarkahan<br>Answer scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Sub Markah | Jum Markah |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|
| (b)(i) | <p>Kenal pasti pemboleh ubah yang dimalarkan dalam eksperimen ini.<br/><i>Identify the constant variable in this experiment.</i></p> <p><b>Contoh Jawapan:</b><br/><i>Sample Answers:</i></p> <p><b>Pemboleh ubah dimalarkan:</b><br/><i>Constant variable:</i><br/>Kepekatan / isipadu enzim pepsin<br/><i>Concentration / volume of enzyme pepsin</i><br/>// Suhu kukus air<br/><i>Temperature of water bath</i><br/>// Isipadu ampaian albumin<br/><i>Volume of albumen suspension</i></p> <p>Mana-mana 1<br/><i>Any 1</i></p> | 1          | 1          |
| (ii)   | <p>Dapat menyatakan kaedah mengendalikan pemboleh ubah yang bergerak balas dalam eksperimen ini.<br/><i>Able to state the method to handle the responding variable in this experiment</i></p> <p><b>Contoh Jawapan:</b><br/><i>Sample answers:</i></p> <p>Memerhati <b>dan</b> merekodkan keadaan / kekeruhan / kejernihan <b>campuran</b> (selepas 15 minit)<br/><i>Observe <b>and</b> record the condition / turbidity / clarity of mixture (after 15 minutes)</i></p> <p>Tolak : larutan<br/><i>Reject : solution</i></p>      | 1          | 1          |
| (c)    | <p>Dapat menyatakan hipotesis bagi eksperimen ini.<br/><i>Able to state a hypothesis of this experiment.</i></p> <p><b>P1: Pemboleh ubah dimanipulasi</b><br/><i>Manipulated variable</i><br/>pH (1/2, 6/7)</p> <p><b>P2 : Pemboleh ubah bergerak balas dan hubungan:</b><br/><i>Responding variable and relationship:</i><br/>Kekeruhan / Kejernihan ampaian albumin<br/><i>Turbidity / Clarity of albumen suspension</i><br/>Hubungan – paling / sangat<br/><i>Relationship – the most / very</i></p> <p>Atau</p>               | 1<br><br>1 | 2          |

|                | Skema pemarkahan<br>Answer scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Sub Markah     | Jum Markah                                                                         |   |              |                                                                                              |   |               |                                                                                              |   |              |                                                                                         |   |  |   |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------------------------------------------------------------------------------|---|--------------|----------------------------------------------------------------------------------------------|---|---------------|----------------------------------------------------------------------------------------------|---|--------------|-----------------------------------------------------------------------------------------|---|--|---|
|                | <p><b>P3 :Pemboleh ubah dimanipulasi</b><br/><i>Manipulated variable</i><br/>Tindak balas / Aktiviti enzim pepsin<br/><i>Reaction / Activity of enzyme pepsin</i></p> <p><b>P4 : Hubungan</b><br/>optimum (hanya untuk pH 1/2)<br/><i>Relationship</i><br/>optimum (only for pH 1/2)</p> <p style="text-align: right;"><b>P1 + P2 // P3 + P4</b></p> <p><b>Contoh jawapan:</b><br/><i>Sample answer:</i></p> <p>P1: Ampaian albumen/ Campuran <u>paling</u> jernih dalam pH 2/<br/>tabung uji P (berbanding dalam pH 7/ tabung uji Q).<br/><i>Albumen suspension/ Mixture is the <u>most</u> clear in pH 2/ test tube P (compared to pH 7/ test tube Q)</i></p> <p>P2: Ampaian albumen/ Campuran <u>lebih</u> jernih dalam pH 2/<br/>tabung uji P berbanding dalam pH 7/ tabung uji Q.<br/><i>Albumen suspension/ Mixture is the clearer in pH 2/ test tube P compared to pH 7/ tabung uji Q).</i></p> <p>P3: pH 2 ialah pH optimum untuk tindak balas enzim pepsin<br/><i>pH 2 is the optimum pH for enzyme pepsin activity</i></p> |                |                                                                                    |   |              |                                                                                              |   |               |                                                                                              |   |              |                                                                                         |   |  |   |
| (d)            | <p>Dapat menyatakan inferens bagi tabung uji P and Q.<br/><i>Able to state inference for test tube P and Q.</i></p> <p><b>Contoh jawapan:</b><br/><i>Sample answer:</i></p> <table><tr><td>Tabung uji P :</td><td>P1: Protein dihidrolisis dengan lengkap<br/><i>Protein is hydrolysed completely</i></td><td>1</td></tr><tr><td>Test tube P:</td><td>P2: Kadar tindak balas (enzim) lebih tinggi<br/><i>Rate of (enzymatic) reaction is higher</i></td><td>1</td></tr><tr><td>Tabung uji Q:</td><td>P3: Protein tidak dihidrolisis dengan lengkap<br/><i>Protein is not hydrolysed completely</i></td><td>1</td></tr><tr><td>Test tube Q:</td><td>P4: Kadar tindak balas enzim lebih rendah<br/><i>Rate of enzymatic reaction is lower</i></td><td>1</td></tr></table> <p style="text-align: right;">Mana-mana P1/P2 atau P3/ P4<br/><i>Any P1/P2 or P3/ P4</i></p>                                                                                                                                                                 | Tabung uji P : | P1: Protein dihidrolisis dengan lengkap<br><i>Protein is hydrolysed completely</i> | 1 | Test tube P: | P2: Kadar tindak balas (enzim) lebih tinggi<br><i>Rate of (enzymatic) reaction is higher</i> | 1 | Tabung uji Q: | P3: Protein tidak dihidrolisis dengan lengkap<br><i>Protein is not hydrolysed completely</i> | 1 | Test tube Q: | P4: Kadar tindak balas enzim lebih rendah<br><i>Rate of enzymatic reaction is lower</i> | 1 |  | 2 |
| Tabung uji P : | P1: Protein dihidrolisis dengan lengkap<br><i>Protein is hydrolysed completely</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1              |                                                                                    |   |              |                                                                                              |   |               |                                                                                              |   |              |                                                                                         |   |  |   |
| Test tube P:   | P2: Kadar tindak balas (enzim) lebih tinggi<br><i>Rate of (enzymatic) reaction is higher</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1              |                                                                                    |   |              |                                                                                              |   |               |                                                                                              |   |              |                                                                                         |   |  |   |
| Tabung uji Q:  | P3: Protein tidak dihidrolisis dengan lengkap<br><i>Protein is not hydrolysed completely</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1              |                                                                                    |   |              |                                                                                              |   |               |                                                                                              |   |              |                                                                                         |   |  |   |
| Test tube Q:   | P4: Kadar tindak balas enzim lebih rendah<br><i>Rate of enzymatic reaction is lower</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1              |                                                                                    |   |              |                                                                                              |   |               |                                                                                              |   |              |                                                                                         |   |  |   |

|     | Skema pemarkahan<br>Answer scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Sub Markah          | Jum Markah |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|------------|
| (e) | <p>Dapat menyatakan dan menerangkan tabung uji yang menunjukkan pH yang optimum untuk aktiviti enzim pepsin.<br/><i>Able to state and explain the test tube that shows optimum pH for enzyme pepsin activity.</i></p> <p><b>Contoh Jawapan:</b><br/><b>Sample Answers:</b></p> <p>P1 : Tabung uji P<br/><i>Test tube P</i></p> <p>P2 : Ampaian albumin yang keruh menjadi ( paling ) jernih<br/><i>The cloudy / chalky albumen suspension becomes (most) clear</i></p> <p>P3: Kadar hidrolisis protein (dalam albumen) paling tinggi<br/><i>Rate of protein hydrolysis (in albumen) is the highest</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                       | 1<br><br>1<br><br>1 | 3          |
| (f) | <p>Dapat memberikan definisi secara operasi bagi hidrolisis.<br/><i>Able to give the operational definition for hydrolysis.</i></p> <p>P1: Proses / tindak balas pemecahan / penguraian kompleks / protein dalam albumen selama <u>15 minit</u><br/><i>Process / reaction of breakdown of complex / protein in albumen in <u>15 minutes</u></i></p> <p>P2: oleh enzim pepsin pada pH 2<br/><i>by enzyme pepsin in pH 2</i></p> <p>P3: menyebabkan ampaian (albumen)/ campuran keruh menjadi jernih<br/><i>Causing cloudy (albumen) suspension/ mixture turns clear</i></p> <p>Mana-mana 2P</p> <p><b>Contoh Jawapan:</b><br/><b>Sample Answers:</b></p> <p>Hidrolisis ialah proses pemecahan protein di dalam albumen selama 15 minit oleh enzim pepsin pada pH 2 menyebabkan ampaian albumen yang keruh menjadi jernih.<br/><i>Hydrolysis is a process of breakdown of protein in albumen for 15 minutes by enzyme pepsin in pH 2 causing cloudy albumen suspension turns clear</i></p> <p>Mana-mana dua<br/><i>Any two</i></p> | 1<br><br>1<br><br>1 | 2          |
|     | TOTAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                     | 15         |

PERATURAN PEMARKAHAN TAMAT

