

PERATURAN PERMARKAHAN AMALI BIOLOGI KERTAS 3

PEPERIKSAAN PERCUBAAN SPM TAHUN 2024

NO	SKEMA PERMARKAHAN	SKOR														
(a) [Memerhati] [Berkomunikasi]	<p>Dapat membina jadual berdasarkan kriteria berikut: <i>Able to construct a table based on the following criteria:</i></p> <p>P1 – Tajuk dengan unit yang betul // <i>Title with correct units</i> P2 – Data (Kepekatan ampaian kanji) // <i>Data (Concentration of starch suspension)</i> P3 – Pemerhatian (Perubahan warna awal dan akhir larutan dalam tabung uji X dan Y) // <i>Observation (Initial and final color change of the solution in test tubes X and Y)</i></p> <p>Contoh jawapan: <i>Sample answers:</i></p> <table border="1"> <thead> <tr> <th rowspan="2">Tabung uji <i>Test tube</i></th> <th rowspan="2">Kepekatan ampaian kanji (%) <i>Concentration of starch suspension (%)</i></th> <th colspan="2">Perubahan warna larutan dalam tabung uji <i>Color change of the solution in test tube</i></th> </tr> <tr> <th>Warna awal <i>Initial color</i></th> <th>Warna akhir <i>Final color</i></th> </tr> </thead> <tbody> <tr> <td>X</td> <td>0.2</td> <td>Biru gelap <i>Dark blue</i></td> <td>Perang / kuning <i>Brown / yellow</i></td> </tr> <tr> <td>Y</td> <td>1.0</td> <td>Biru gelap <i>Dark blue</i></td> <td>Biru gelap <i>Dark blue</i></td> </tr> </tbody> </table>	Tabung uji <i>Test tube</i>	Kepekatan ampaian kanji (%) <i>Concentration of starch suspension (%)</i>	Perubahan warna larutan dalam tabung uji <i>Color change of the solution in test tube</i>		Warna awal <i>Initial color</i>	Warna akhir <i>Final color</i>	X	0.2	Biru gelap <i>Dark blue</i>	Perang / kuning <i>Brown / yellow</i>	Y	1.0	Biru gelap <i>Dark blue</i>	Biru gelap <i>Dark blue</i>	3
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(b) [Inferens]	<p>Boleh menyatakan inferens untuk pemerhatian di tabung uji X dan Y <i>Can state inference for observation in test tubes X and Y.</i></p> <p>Jawapan: <i>Answers:</i></p> <p>Tabung uji X / Test tube X Berlaku hidrolisis (ampaian) kanji / substrat oleh enzim amilase <i>Hydrolysis of the starch (suspension)/ substrate by amylase occurs</i></p>	2														

	<p>Tabung uji Y / Test tube Y Tidak berlaku / tak lengkap hidrolisis (ampaian) kanji / substrat oleh enzim amilase <i>No / incomplete hydrolysis of starch (suspension) / substrate by amylase</i></p>	
<p>(c) (i) [Mengawal pemboleh ubah]</p>	<p>Dapat menyatakan pemboleh ubah dimalarkan. <i>Able to state constant variable.</i></p> <p>Jawapan: <i>Answers:</i></p> <p>Kepekatan (larutan) enzim amilase <i>Concentration of amylase (solution)</i></p> <p>Isipadu larutan enzim amilase <i>Volume of amylase solution</i></p> <p>Isipadu (ampaian) kanji <i>Volume of starch (suspension)</i></p> <p>Tempoh / Masa eksperimen <i>Duration / time of experiment</i></p> <p>Suhu persekitaran / suhu bilik <i>Surrounding / room temperature</i></p> <p>* FAO – First Attempt Only</p>	1
<p>(c) (ii) [Mengawal pemboleh ubah]</p>	<p>Dapat menyatakan pemboleh ubah dimanipulasi <i>Able to state manipulated variable</i></p> <p>Jawapan: <i>Answers:</i></p> <p>Kepekatan ampaiian kanji <i>Concentration of starch suspension</i></p>	1
<p>(d) [Mengawal pemboleh ubah]</p>	<p>Dapat menerangkan bagaimana pemboleh ubah yang dimanipulasi di kendalikan <i>Able to explain how the manipulated variable is handled</i></p> <p>Contoh jawapan: <i>Sample answers:</i></p>	1

	<p>Gunakan kepekatan ampaian kanji yang berbeza iaitu 0.2 % dan 1.0 % <i>Use different concentrations of starch suspension which are 0.2% and 1.0%</i></p>	
<p>(e) [Mentafsir data]</p>	<p>Dapat membuat kesimpulan yang betul berdasarkan kriteria berikut: <i>Able to make a correct conclusion based on the following criteria:</i></p> <p>P1: Enzim amilase menghidrolisis (ampaian) kanji // <i>Amylase hydrolyzes the starch (suspension)</i></p> <p>P2: Warna akhir larutan (iodin) menjadi perang / warna biru tua dilunturkan <i>The final color of the (iodin) solution becomes brown / the dark blue colour is decolourised</i></p> <p>P3: Apabila kepekatan (ampaian) kanji bertambah, kadar tindak balas meningkat sehingga mencapai tahap maksimum dan menjadi malar <i>When the concentration of starch (suspension) increases, the rate of reaction increases until it reaches a maximum level and become constant</i></p> <p>P4: Kepekatan enzim amilase ialah faktor penghad <i>Concentration of amylase is the limiting factor</i></p> <p>Contoh jawapan: <i>Sample answers:</i></p> <p>Enzim amilase menghidrolisis (ampaian) kanji menyebabkan warna akhir larutan(iodin) menjadi perang / warna biru tua dilunturkan. Apabila kepekatan (ampaian) kanji bertambah, kadar tindak balas meningkat sehingga mencapai tahap maksimum dan menjadi malar kerana kepekatan enzim amilase ialah faktor penghad.</p> <p><i>Amylase hydrolyzes the starch (suspension) causing the final color of the (iodin) solution to become brown / the dark blue colour is decolourised. When the concentration of starch (suspension) increases, the rate of reaction increases until it reaches a maximum level and become constant because the concentration of amylase is the limiting factor.</i></p>	<p>3</p> <p>Mana-mana 3 P / Any 3 P</p>

<p>(f)(i) [Meramal]</p>	<p>Boleh meramal dengan betul <i>Can predict correctly</i></p> <p>Warna biru tua kekal / tiada perubahan / tidak dilunturkan <i>The dark blue color remains / no changes / does not decolourise</i></p>	<p>1</p>									
<p>(f)(ii) [Meramal]</p>	<p>Boleh menerangkan ramalan dengan betul berdasarkan kriteria berikut: <i>Can correctly explain predictions based on the following criteria:</i></p> <p>P1- enzim pepsin tidak dapat menghidrolisis (ampaian) kanji// Kanji bukan substrat bagi enzim pepsin <i>Pepsin cannot hydrolyze starch (suspension)// Starch is not the substrate for pepsin</i></p> <p>P2- Tindakan pepsin/ enzim adalah spesifik// Pepsin/ enzim mempunyai tapak aktif yang spesifik <i>Pepsin/ enzyme action is specific// Pepsin/enzyme has specific active site</i></p> <p style="text-align: right;">Mana-mana P // Any P</p>	<p>1</p>									
<p>(g) [Mengelas]</p>	<p>Boleh mengelaskan bahan dengan padanan yang betul <i>Can classify materials with correct matches.</i></p> <table border="1"> <thead> <tr> <th>Substrat <i>Substrate</i></th> <th>Enzim <i>Enzyme</i></th> <th>Hasil <i>Product</i></th> </tr> </thead> <tbody> <tr> <td>Maltosa <i>Maltose</i></td> <td>Maltase <i>Maltase</i></td> <td>Glukosa <i>Glucose</i></td> </tr> <tr> <td>Peptida <i>Peptide</i></td> <td>Erepsin <i>Erepsin</i></td> <td>Asid amino <i>Amino acid</i></td> </tr> </tbody> </table>	Substrat <i>Substrate</i>	Enzim <i>Enzyme</i>	Hasil <i>Product</i>	Maltosa <i>Maltose</i>	Maltase <i>Maltase</i>	Glukosa <i>Glucose</i>	Peptida <i>Peptide</i>	Erepsin <i>Erepsin</i>	Asid amino <i>Amino acid</i>	<p>1 1</p>
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