

PERATURAN PERMARKAHAN AMALI BIOLOGI KERTAS 3

PEPERIKSAAN PERCUBAAN SPM TAHUN 2024

NO	SKEMA PERMARKAHAN	SKOR														
(a) [Memerhati] [Berkomunikasi]	Dapat membina jadual berdasarkan kriteria berikut: <i>Able to construct a table based on the following criteria:</i> 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> Contoh jawapan: <i>Sample answers:</i> <table><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><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></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]	Boleh menyatakan inferens untuk pemerhatian di tabung uji X dan Y <i>Can state inference for observation in test tubes X and Y.</i> Jawapan: <i>Answers:</i> 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>	2														

	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>	
(c) (i) [Mengawal pemboleh ubah]	Dapat menyatakan pemboleh ubah dimalarkan. <i>Able to state constant variable.</i> Jawapan: <i>Answers:</i> Kepekatan (larutan) enzim amilase <i>Concentration of amylase (solution)</i> Isipadu larutan enzim amilase <i>Volume of amylase solution</i> Isipadu (ampaian) kanji <i>Volume of starch (suspension)</i> Tempoh / Masa eksperimen <i>Duration / time of experiment</i> Suhu persekitaran / suhu bilik <i>Surrounding / room temperature</i> * FAO – First Attempt Only	1
(c) (ii) [Mengawal pemboleh ubah]	Dapat menyatakan pemboleh ubah dimanipulasi <i>Able to state manipulated variable</i> Jawapan: <i>Answers:</i> Kepekatan ampaiian kanji <i>Concentration of starch suspension</i>	1
(d) [Mengawal pemboleh ubah]	Dapat menerangkan bagaimana pemboleh ubah yang dimanipulasi di kendalikan <i>Able to explain how the manipulated variable is handled</i> Contoh jawapan: <i>Sample answers:</i>	1



	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>	
(e) [Mentafsir data]	Dapat membuat kesimpulan yang betul berdasarkan kriteria berikut: <i>Able to make a correct conclusion based on the following criteria:</i> P1: Enzim amilase menghidrolisis (ampaian) kanji // <i>Amylase hydrolyzes the starch (suspension)</i> 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> 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> P4: Kepekatan enzim amilase ialah faktor penghad <i>Concentration of amylase is the limiting factor</i> Contoh jawapan: <i>Sample answers:</i> 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. <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> Mana-mana 3 P / Any 3 P	3

(f)(i) [Meramal]	Boleh meramal dengan betul <i>Can predict correctly</i> Warna biru tua kekal / tiada perubahan / tidak dilunturkan <i>The dark blue color remains / no changes / does not decolourise</i>	1									
(f)(ii) [Meramal]	Boleh menerangkan ramalan dengan betul berdasarkan kriteria berikut: <i>Can correctly explain predictions based on the following criteria:</i> 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> 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> Mana-mana P // Any P	1									
(g) [Mengelas]	Boleh mengelaskan bahan dengan padanan yang betul <i>Can classify materials with correct matches.</i> <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>	1 1
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