SAMPEL PERCUMA

Skema Jawapan Biologi STPM 2024 Semester 1 Pahang (Modul PdPC)

Set penuh: Kertas Percubaan STPM

Sem 1 · Biologi

Sampel ini: 5 muka surat. Set penuh ada:

- 3 fail PDF
- Semester 1: kertas percubaan (trial) negeri, subjek yang dipilih + skema
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964/1 **STPM 2024**

BIOLOGY (BIOLOGI)

PAPER 1 (KERTAS 1)

One and a half hours (Satu jam setengah)

MARKING SCHEMES

MODUL PENTAKSIRAN PDPC

SEMESTER 1

NEGERI PAHANG

Instructions to candidates:

DO NOT OPEN THIS QUESTION PAPER UNTIL YOU ARE TOLD TO DO SO.

Section A – Objective questions (15 marks). Darken your answers in the OMR section below.

Answer **all** *questions in Section A.*

Answer **all** *questions in Section B.*

Answer **two** *questions only in Section C. All working should be shown. For numerical answers, units should be quoted wherever appropriate.*

Answers may be written either in English or Malay.

Section A (Bahagian A)	
1 - 15	
Section B (Bahagian B)	
16	
17	
Section C (Bahagian C)	
Total (Jumlah)	

BIOLOGY TERM 1 2024

ANSWER SCHEMES

SECTION A (MULTIPLE-CHOICE)

Answer key

Question Number	Key	Question Number	Key	Question Number	Key
1	**D**	6	**B**	11	**D**
2	**A**	7	**A**	12	**C**
3	**B**	8	**C**	13	**A**
4	**C**	9	**A**	14	**B**
5	**C**	10	**B**	15	**D**

SECTION B

<table>
<tr><td>16(a)</td><td>• 70 μ mol min^{-1};</td><td>1m</td></tr>
<tr><td>(b)(i)</td><td>• T : competitive inhibitor;
• its effect can be overcome by increasing substrate concentration (dependent);
• can achieve the same Vmax as reaction without T.</td><td>2m</td></tr>
<tr><td>(ii)</td><td>• Substance T has similar shape/structure with substrate;
• Binds/fits to active site of enzyme (temporary) (preventing substrate from binding to it) / compete with substrate for the active site;</td><td>2m</td></tr>
<tr><td>(c)</td><td>• Enzyme has reached its maximum rate of reaction // all <u>active sites</u> of enzymes are saturated by substrates;
• Enzyme concentration is the limiting factor;</td><td>2m</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>17(a)</td><td>• Photolysis of water;</td><td>1m</td></tr>
<tr><td>(b)</td><td><table>
<tr><td>cyclic photophosphorylation</td><td>non-cyclic photophosphorylation</td></tr>
<tr><td>photosystem I is involved.</td><td>involves both Photosystem I and II.</td></tr>
<tr><td>Electrons move in a cyclic pattern.</td><td>Electrons do not travel in a cyclic pattern.</td></tr>
<tr><td>P700 is the active reaction centre</td><td>P680 is the active reaction centre</td></tr>
<tr><td>Electrons re-enter Photosystem I.</td><td>NADP accepts electrons from Photosystem I and does not return them.</td></tr>
<tr><td>ATP molecules are produced.</td><td>The molecules ATP and NADPH are both produced.</td></tr>
<tr><td>does not require water.</td><td>The procedure necessitates the use of water, as well as the use of photolysis.</td></tr>
<tr><td>NADPH is not synthesized.</td><td>NADPH is synthesized.</td></tr>
<tr><td>As a result, oxygen is not created as a by-product.</td><td>Oxygen is created as a by-product.</td></tr>
<tr><td>This method is ideal only in the case of bacteria.</td><td>This method works well with all green plants.</td></tr>
</table></td><td>Any 3
3m</td></tr>
<tr><td>(c)</td><td>• ATP;
• NADPH;</td><td>2m</td></tr>
<tr><td>(d)</td><td>• ATP is used to phosphorylate glycerate phosphate and ribulose phosphate to increase their reactivity;
• NADPH is used to reduce glycerate bisphosphate to glyceraldehyde phosphate;</td><td>2m</td></tr>
</table>

SECTION C

18(a)	• Steroid hormones are cyclical chemical compounds made up of (four) rings of carbon atoms (three six-membered and one five); • that play an essential role in a wide range of physiological functions, including growth, development, energy metabolism, homeostasis and reproduction; Five functions of steroid • Cholesterol – precursor of bile acids/steroid hormones/vitamin D/component of cell membrane; • Bile acids – component of bile salts/emulsification of fats; • Vitamin D – helps to control absorption of calcium and phosphate from the gut (bone and teeth formation); • Sex hormones – testosterone stimulates development of secondary sexual characteristics in males/oestrogen stimulates repair of endometrium/controls development of sex organ and secondary characteristics in female; • Aldosterone – to increase absorption of sodium ions by kidney tubules;	7m
18(b)	• Lecithin is the most common phospholipids in the human body; • Coline which is positively charged, is linked to the phosphate group; • The plasma membrane separates the protoplasm from the outer environment of the cell (which also contains water); • This causes the phospholipid molecules to arrange themselves to form two-layer membrane/bilayers; • (Polar) hydrophilic phospholipid heads point outwards; • Attracted to water and form hydrogen bonds with the water molecules; • (Non-polar) hydrocarbon fatty acids tails form a hydrophobic interaction with one another; • Unsaturated fatty acids of the phospholipids help to maintain the fluidity of the membrane; • The properties of phospholipids molecules make them an important component of cell membranes of the organelles;	8m

(b)	• The surface area of membrane; • The greater the surface area, the higher the rate of diffusion; • The diffusion distance; • The shorter the diffusion distance, the greater the rate of diffusion or the thicker the membrane, the greater the diffusion distance and the lower the rate of diffusion; • The concentration gradient; • The greater the difference in concentration between two places the faster the rate of diffusion between them or the steeper the gradient; • The higher the rate of diffusion; • The size and type of molecules; • Small and non-polar molecules e.g oxygen, carbon dioxide and lipid soluble substances e.g alcohol , vitamin.A, D, E and K can diffuse through the lipid bilayer of the membrane; • Polar and charged particles pass through pores in the channel proteins; • Molecules that are soluble in lipids can cross the membrane faster than water soluble ones; • Temperature; • At higher temperatures, molecules have more kinetic energy and so diffuse more quickly; *Any 5 pairs*	10m

TAMAT SAMPEL

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