SAMPEL PERCUMA

Trial STPM 2016 Biologi Semester 1 SMJK Chung Ling

Set penuh: Kertas Percubaan STPM

Sem 1 · Biologi

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Sampel bermula di muka surat sebelah

Name :…… Class:……

SMJK CHUNG LING PULAU PINANG
PEPERIKSAAN PERCUBAAN SEMESTER 1 2016
BIOLOGY STPM PAPER 1

One and a half hours

Instruction to candidates:

Answer **all** *questions in Section A. Indicate the correct answer on the Multiple-choice Answer Sheet provided.*
Answer **all** *questions in Section B. Write the answers in the spaces provided.*
Answer any **two** *questions in Section C. You may answer all the questions* **but**, *only the first* **two** *answers will be marked. Write the answers in the answer sheets provided. All working should be shown.*
For numerical answers, unit should be quoted wherever appropriate.
Begin each answer on a fresh answer sheet.

Section A [15 *marks*]

***Answer* all *questions in this section*.**

1. Below are four statements about lipids. Which of the following combination of statements is correct?

I. Lipids consist of glycerol combined with alcohol
II. Both fats and oils are triglycerides
III. Oils are more saturated with hydrogen than fats
IV. Lipids which has fatty acids with double bonds are unsaturated

A. II only B. II and IV C. I and IV D. I, III and IV

2. A common feature of starch and glycogen is that molecules of both

A. are water soluble polysaccharides
B. contain repeated monomers of glucose and galactose
C. are important structural components of plant cell walls
D. are polymers of glucose

3. Which of the following statements about nucleic acids are <u>true</u>?

I Some RNA and DNA molecules can be double-stranded
II In a deoxyribose molecule, the oxygen at the fourth carbon is removed
III The segment of DNA which produces the messenger RNA is called cistron
IV The function of transfer RNA is to transport amino acid to the protein synthesis site

A. I and II B. I, III and IV C. II, III and IV D. III and IV

4. What are the characteristic of a prokaryotic cell?

	DNA structure	Endoplasmic reticulum	Plasmids	Ribosomal size
A.	circular	absent	present	small
B.	circular	present	Absent	large
C.	linear	absent	present	small
D.	linear	present	absent	large

5. Which of the following is <u>not</u> true of a mitochondrion?

A. It contians DNA
B. It is the site of Krebs cycle
C. It possesses two layers of membranes
D. The folded inner membrane is called thylakoid

6. The table below lists the different epithelium cell types and their examples.

Cell Type	Example
(a) Squamous	I Mammary glands
(b) Cuboidal	II Sweat glands
(c) Columnar	III Urinary bladder
(d) Transitional	IV Innermost layer of the esophagus

Which of the following combinations is correct?

	(a)	(b)	(c)	(d)
A.	I	II	III	IV
B.	IV	II	I	III
C.	I	III	IV	II
D.	II	I	IV	III

7. Which of the following statements about endocytosis is not true?

A. Bulk transport of material released out of a cell.
B. Plasma membrane invaginates inwards to form a vacuole.
C. ATP is required for the active transport process.
D. The plasma membrane of the cell becomes smaller.

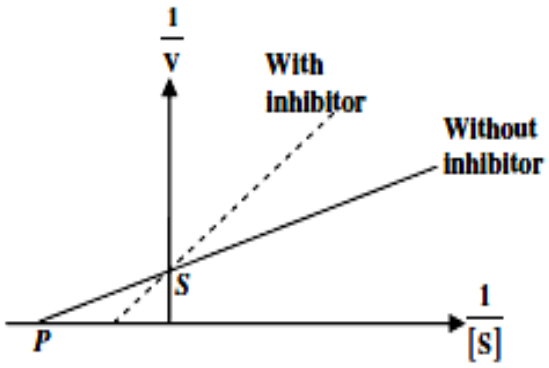
8. A plant cell is placed in a solution with a more negative water potential than the cell contents. Which change occurs in the cell and what causes the change?

	change	Cause
A.	Cell becomes more turgid	Water diffuses into cell
B.	Cell becomes more turgid	Solution diffuses into of the cell
C.	Cell becomes more flaccid	Water diffuses out of the cell
D.	Cell becomes more flaccid	Solution diffuses out of the cell

9. Which statement <u>best</u> explains why enzymes are specific in their action?

A. Enzymes have polypeptide chains.
B. Enzymes have large fibrous protein.
C. Enzymes have specific surface configuration.
D. Enzymes are not changed or consumed during reaction.

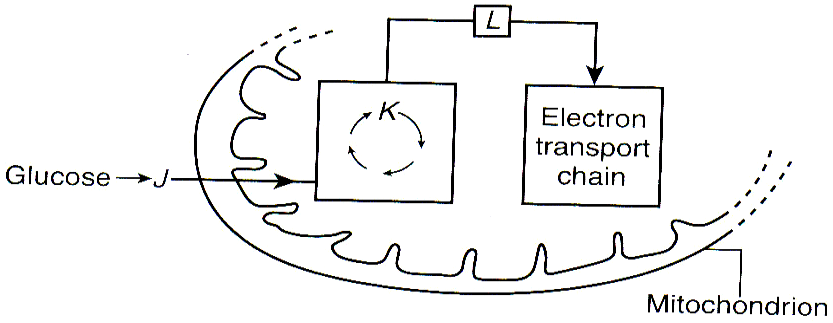
10. The Lineweaver-Burk plot below shows an enzyme-catalysed reaction.



Which of the following is <u>true</u> for values P and S on the graph?

	P	S
A.	$-\frac{1}{K_m}$	$-\frac{1}{V_{max}}$
B.	$\frac{1}{K_m}$	$\frac{1}{V_{max}}$
C.	$\frac{1}{K_m}$	$-\frac{1}{V_{max}}$
D.	$-\frac{1}{K_m}$	$\frac{1}{V_{max}}$

11. The diagram below illustrates the main stages of aerobic respiration in a cell. What substances are J, K and L?



	J	K	L
A	Glycerate phosphate	Oxaloacetate	ATP
B	NADH	Acetyl coenzyme A	$FADH_2$
C	Pyruvate	Citrate	NADH
D	Pyruvate	Acetyl coenzyme A	ATP

12. Which of the following substances are produced when one molecule of acetyl coenzyme A enters the Krebs cycle?

I 1 GTP II 4 NADH III 3 NADH IV 1 $FADH_2$ V 2 $FADH_2$

A I, II and III B I, II and IV C I, III and IV D II, III and V

13. Which of the following is <u>true</u> of non-cyclic photophosphorylation in photosynthesis?

A. Only photosystem I is involved.
B. Carbon dioxide is reduced by RuBP.
C. It produces ATP and NADPH.
D. It occurs in the stroma of chloroplast.

14. Which of the following sequences correctly represents the flow of electrons during photosynthesis?

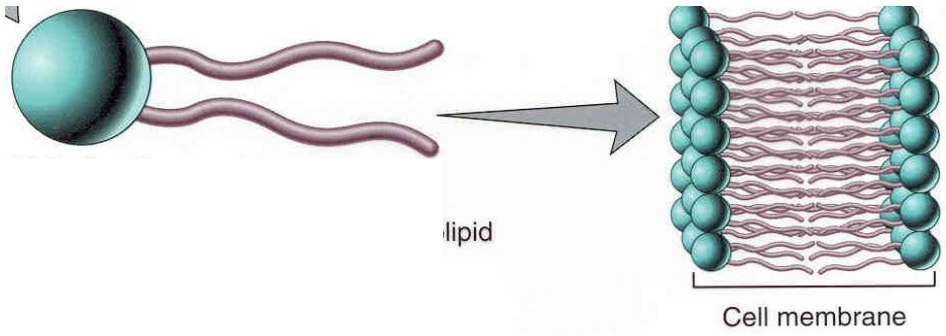
A. NADPH → O_2 → CO_2
B. Water → NADPH → Calvin cycle
C. NADPH → chlorophyll → Calvin cycle
D. Water → Photosystem I → Photosystem II

15. A C_3 plant is different from a C_4 plant because it

A. activates Calvin cycle at night
B. uses more energy for photosynthesis
C. has both cyclic and non-cyclic photophosphorylations
D. produces more sugar as the product of photosynthesis

Section B [15 *marks*]
***Answer* all *questions in this section*.**

16. The diagram below shows the structure of a lipid.



(a) Name this lipid. **[1 mark]**

_____

(b) Explain how this lipid forms a double layer in a cell membrane. **[2 marks]**

_____

_____

_____

(c) State <u>two</u> functions of this lipid in the cell membrane. **[2 marks]**

_____

_____

(d) Explain why Na^+ and K^+ cannot pass freely across the bilayer in the cell membrane. **[1 mark]**

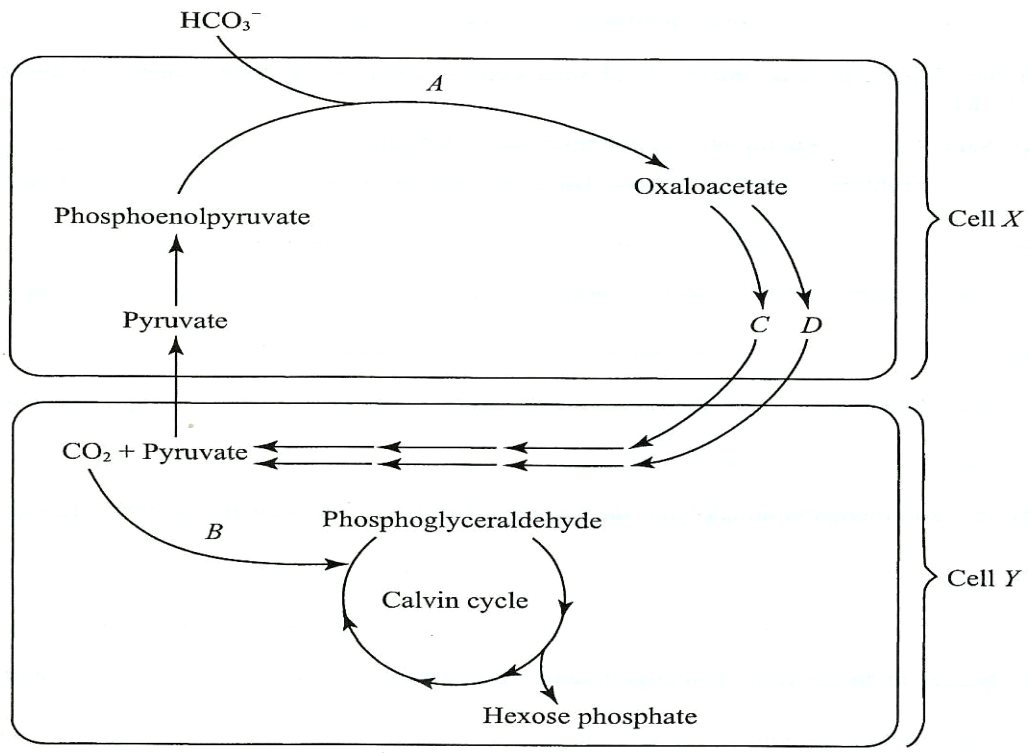
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_____

(e) Suggest <u>one</u> possible function of the carbohydrate chains attached to the surface of the membrane. **[1 mark]**

_____

17. The diagram below shows carbon fixation in Hatch-Slack pathway.



(a) Name the enzymes A and B which catalyse the respective reactions. [2 marks]

A : _____ **B :** _____

(b) Name the metabolites C. [1 mark]

_____

(c) Name the cell Y. [1 mark]

_____

(d) Describe the processes that occur in cell X. [3 marks]

_____

_____

_____

(e) State the importance of Hatch-Slack pathway to C_4 plants. [1 mark]

_____

_____

Section C [30 *marks*]

***Answer any* two *questions in this section*.**

18.(a) Explain the structures and functions of the following organelles.

(i) Mitochondrion [3 marks]

(ii) Golgi apparatus [3 marks]

(b) Explain a technique to isolate the organelles in a cell. [9 marks]

19.(a) Explain what is meant by the term *enzyme inhibitors*? [1 mark]

(b) Differentiate between competitive inhibitors and non-competitive inhibitors by using a suitable example. [8 marks]

(c) Explain the effect of temperature and pH on enzyme-controlled reactions. [6 marks]

20. (a) Describe how the pyruvate, ATP and NADH are generated in the glycolysis during cellular respiration. [10 marks]

(b) Explain the roles of the NADH and $FADH_2$ in the electron transport chain of the mitochondria. [5 marks]

TAMAT SAMPEL

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