SAMPEL PERCUMA

Trial STPM 2013 Biologi Semester 1

Set penuh: Kertas Percubaan STPM

Sem 1 · Biologi

Sampel ini: 8 muka surat. Set penuh ada:

- 3 fail PDF
- Semester 1: kertas percubaan (trial) negeri, subjek yang dipilih + skema
- Blueprint 30 hari Semester 1 (setiap subjek)
- Semester 3: percubaan 2024, 10 subjek, banyak negeri, soalan + skema dalam satu fail

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Sampel bermula di muka surat sebelah

Section A

[15 marks]

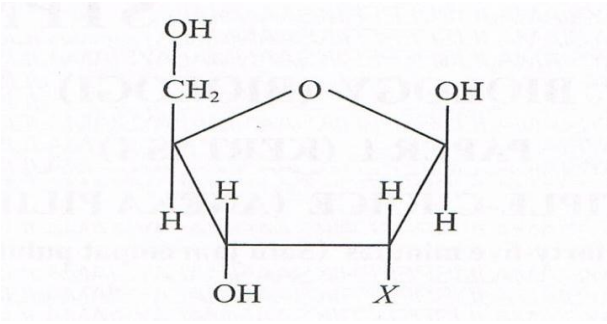
Answer **all** the questions in this section.

1. Which of the following properties of water match with its significance to living organisms?

Properties of water	Importance to living organsims
I High specific heat capacity	(a) Terrestrial animals have relatively constant body temperature
II Low viscosity	(b) Allows mosquitoes to land on water
III High surface tension	(c) Blood flows easily through narrow capillaries
IV Universal solvent	(d) Blood plasma transport nutrients

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

2. The diagram below shows a pentose sugar molecule which can be found in DNA.



Which of the following is true about the pentose sugar?

A The sugar is ribose.

B X represents a hydroxyl group.

C X represents a hydrogen atom.

D The sugar is fructose.

3. Which of the following differences between mitochondria and chloroplast is true?

A ATP is synthesised only in mitochondria.

B DNA is found only in chloroplasts.

C Enzymes are embedded in the membranes of mitochondria only.

D NADP is found only in chloroplast.

4. Which plant tissue is made up of living polygonal, closely-packed cells that have uneven thickening at the corners of the cell wall?

A parenchyma

B collenchyma

C sclerenchyma

D endodermis

5. Which of the following features is **not** true about the pseudostratified epithelium that lines the trachea?

A It has goblet cells thats secrete mucus to trap dust.

B All of its cells have apical surface exposed to the environment.

C It only has one layer of cells attached to the basement membrane.

D Its apical surface is lined with cilia.

6. Which of the following statement is correct on the type of microscope and its function?

A Transmission electron microscope – to produce a three dimensional view of a specimen.

B Scanning electron microscope – to produce a two dimensional view of a specimen.

C Phase contrast microscope – to study living, non pigmented specimens.

D Optical microscope – to view the ultrastructure of a plant cell.

7. Which statement is **not** true involving the movement of substances in and out of cells?

A Facilitated diffusion using carrier proteins requires energy.

B Charged ions diffuse through hydrophilic protein channels.

C Small uncharged molecules diffuse through the phospholipid bilayer.

D Endocytosis involves the bulk transport of materials into cells.

8. Which of the following statements are true about the plasma membrane components with their functions?

I Glycolipid – Regulate membrane fluidity

II Cholesterol – Cell-cell recognition

III Phospholipid bilayer – Movement of non-polar molecules

IV Protein – Facilitated diffusion of substances

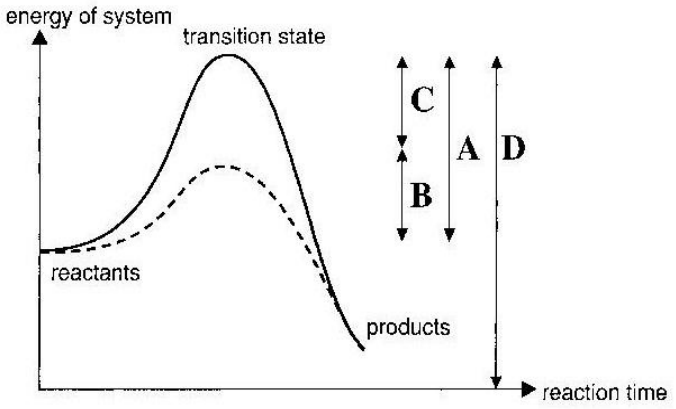
A I and II

B II and III

C III and IV

D II and IV

9. The diagram below shows a reaction with and without an enzyme. What is the activation energy of the enzyme-controlled reaction?



10. Which enzyme reaction is correct according to the International Union of Biochemistry (IUB) ?

A Oxidoreductase catalyses reactions by the transfer of oxygen, hydrogen and carbon dioxide.

B Lyase catalyses the hydrolysis of a substrate using water.

C Ligase catalyses the formation of new bonds using energy from ATP.

D Isomerase transfers atoms from one molecule to another.

11. Which of the following statement is **not** true about the uses of fermentation in the food industry?

A *Saccharomyces* releases carbon dioxide to help dough rise in bread making

B *Lactobacillus* converts lactose to lactate in yoghurt

C *Aspergillus* ferments uncooked rice to *tapai*

D *Saccharomyces* converts fermented cooked rice to *tapai*

12. Which of the following steps in the Kreb's cycle below reduces the NAD^+ to $NADH+H^+$?

I From citrate to isocitrate

II From α-ketoglutarate to succinyl CoA

III From succinate to fumarate

IV From malate to oxaloacetate

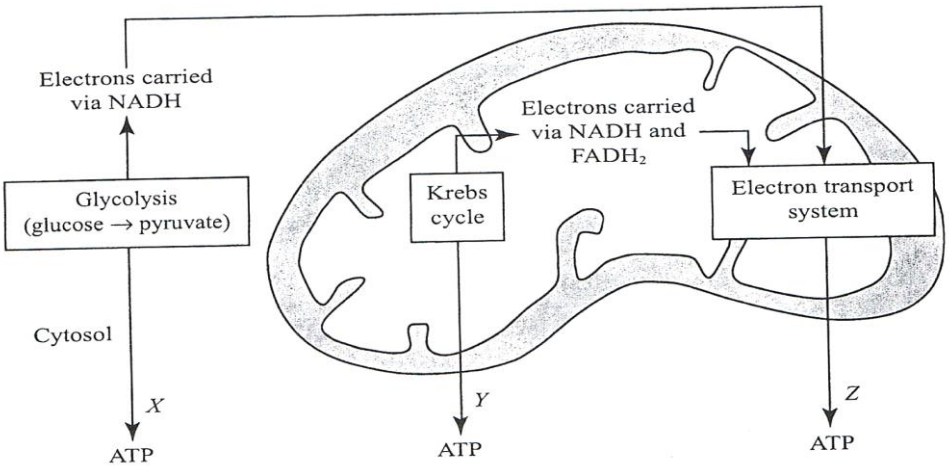
A I and III

B II and IV

C I and IV

D II and III

13. The diagram below shows an overview of cellular respiration.



Which of the modes of ATP synthesis at X, Y and Z are correct?

	X	Y	Z
A	Oxidative phosphorylation	Substrate-level phosphorylation	Oxidative phosphorylation
B	Oxidative phosphorylation	Oxidative phosphorylation	Substrate-level phosphorylation
C	Substrate-level phosphorylation	Oxidative phosphorylation	Substrate-level phosphorylation
D	Substrate-level phosphorylation	Substrate-level phosphorylation	Oxidative phosphorylation

14. Which is true about CAM plants?

A Krantz anatomy is present in the leaves

B Oxaloacetate is stored in the vacuole at night to prevent pH change.

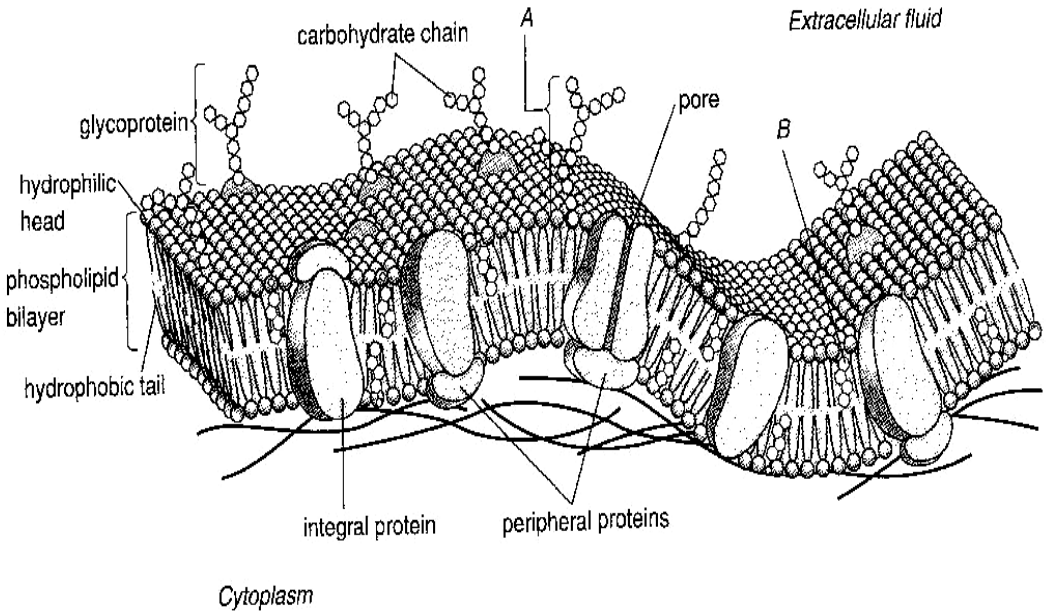
C Photorespiration is reduced.

D Photosynthetic yield is lower.

Section B

[15 marks]

16. The diagram below shows the cross section of the plasma membrane according to the Singer-Nicolson fluid mosaic model.



a) Explain why the cell surface membrane is described as fluid mosaic. (2 marks)

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b) i) Name the structure labelled A. (1 mark)

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ii) State the function of the structure labelled B. (1 mark)

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c) Describe any **two** functions of the protein in the plasma membrane. (2 marks)

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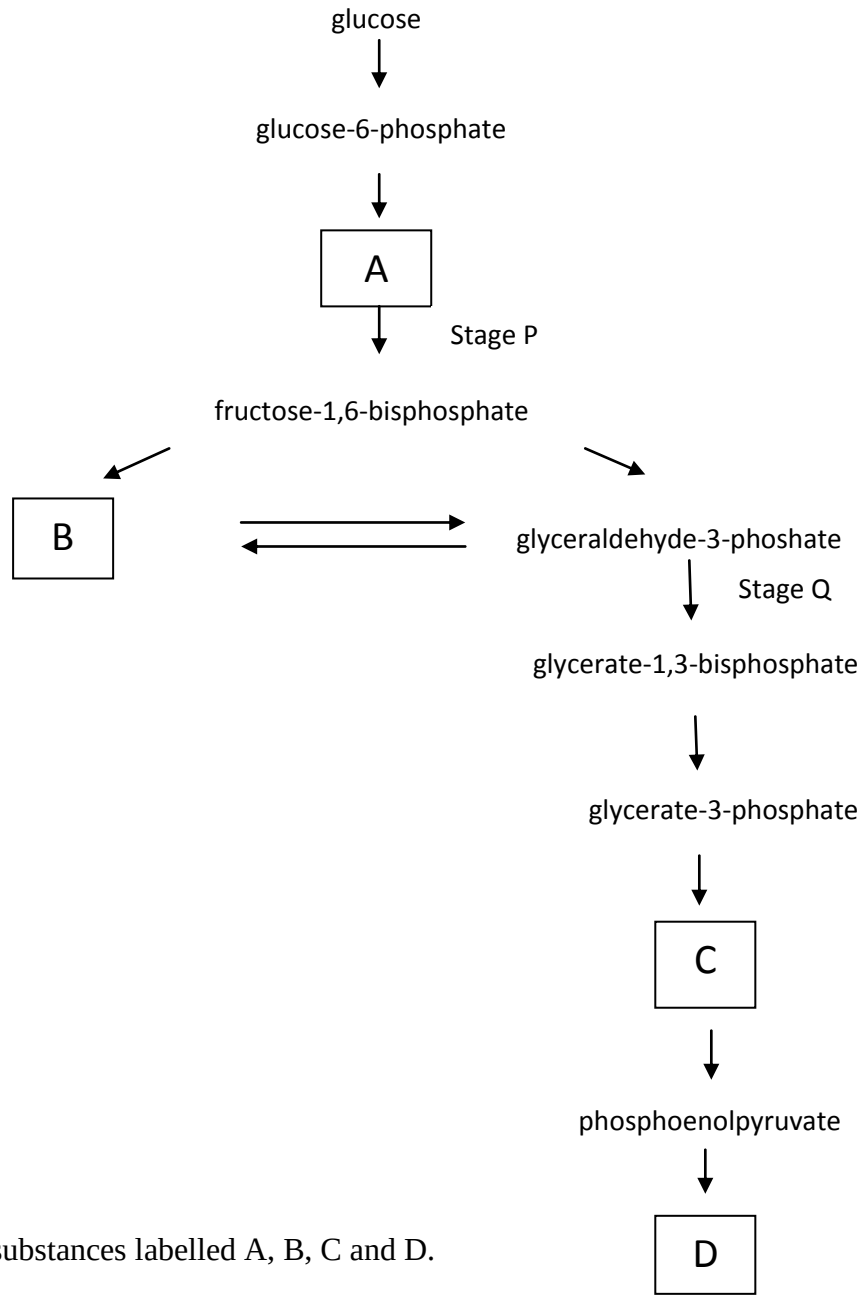
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d) Give an adaptation of the membrane surrounding a lysosome. (1 mark)

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17. The diagram below outlines the main stages in glycolysis



a) Name the substances labelled A, B, C and D. (2 marks)

Answer scheme for trial semester 1 2013

Section A

1.	B	9.	B
2.	C	10.	C
3.	D	11.	C
4.	B	12.	B
5.	B	13.	D
6.	C	14.	C
7.	A	15.	A
8.	C		

Section B

Ques	Suggested answer	Marks
16. a)	- The phospholipid molecules move laterally giving the membrane fluid structure.	1
	- Proteins are scatterred in the fluid phospholipid bilayer giving it a mosaic pattern	1
b) i)	A : Glycolipid	1
ii)	B : Stabilises the membrane structure / regulates the fluidity of the phospholipid bilayer	1
c)	- The protein form channel or carriers for transmembrane transport of substances	1
	- The protein may bind with short oligosaccharide forming glycoprotein for cell-cell recognition	1
	- The protein act as adhesion proteins that joins cells together forming tissue	1
	- The protein act as receptor sites to bind with target extracellular hormones to produce chemical changes inside the cell.	1

TAMAT SAMPEL

Suka sampel ini?

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