SAMPEL PERCUMA

Trial STPM 2022 Biologi Semester 1 Terengganu

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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JABATAN PENDIDIKAN NEGERI TERENGGANU

STPM 2022

PEPERIKSAAN PERCUBAAN
SEMESTER 1

BIOLOGY

Nama :.....

Kelas :.....

DIBIAYAI OLEH KERAJAAN NEGERI TERENGGANU

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tanpa kebenaran Pengarah Pendidikan Negeri Terengganu

Section A [15 marks]

Answer **all** questions in this section.

1 Which is NOT true about the property and physiological role of water ?

	Property	Physiological role
A	Low viscosity	Acts as a transport medium
B	Denser than ice	Provides cooling effect
C	Cohesive and adhesive	Serves as a transport medium
D	High heat of vaporisation	Helps living organisms resist overheating

2 What chemical property of lipids accounts for their insolubility in water?

A The length of the carbon chain
B The branching of saturated fatty acid
C The large number of nonpolar C—H bonds
D The C=C bonds found in unsaturated fatty acids

3 The following statements are true of parenchyma cells **except**

A Most fleshy tissue of fruits is composed mostly of parenchyma cells
B Parenchyma cells have thicker primary walls than that of collenchyma cells
C Photosynthesis occurs within the chloroplast of parenchyma cells of the leaf
D Most parenchyma cells retain the ability to divide and differentiate into other types of plant cells

4 The following features are true for Scanning electron microscope (SEM) and Transmission electron microscope (TEM) **except**

I An electron beam is used
II A three-dimensional view image is produced
III The specimen is coated with a thin layer of metal
IV A narrow electron beam is used to illuminate the surface of the specimen

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

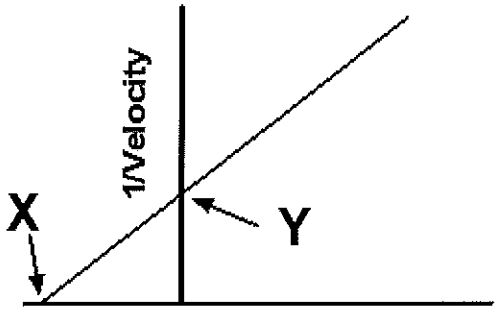
5 Which of the following mechanism is bringing material into a cell?

A Pinocytosis
B Endocytosis
C Exocytosis
D Phagocytosis

9 After vigorous activity, what will happen to the lactate produced in muscle cells?

A Reduced to glucose
B Oxidised to pyruvate
C Converted into glycogen
D Oxidised to carbon dioxide and water

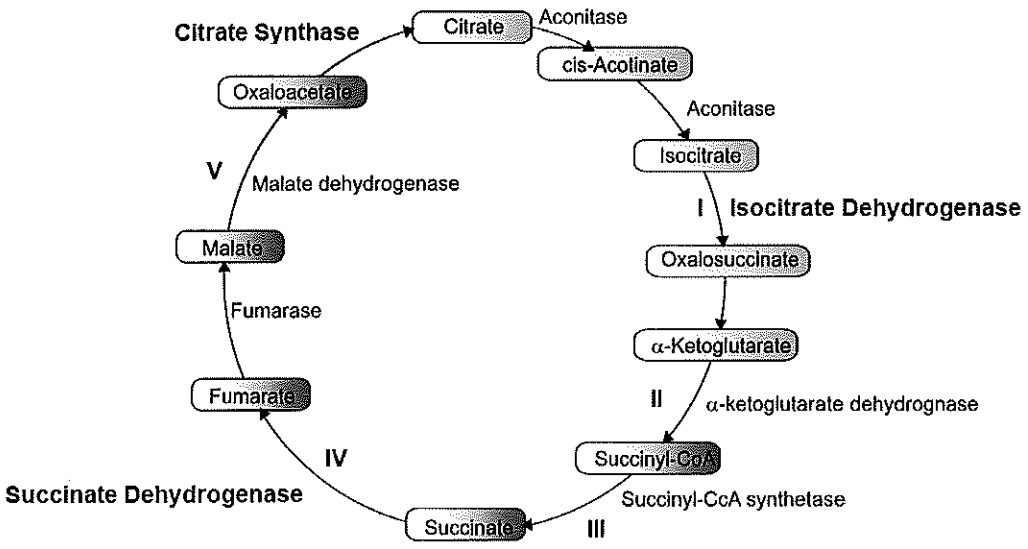
10 The graph below shows Lineweaver-Burk plot for catalysis succinate dehydrogenase



If X equals to -4×10^4 M^{-1} and Y equals to 2.5×10^9 mol^{-1} min, which of the following is true ?

A $K_m = 2.5 \times 10^5$ M^{-1}
B $K_m = 2.5 \times 10^{-5}$ M
C $V_{max} = 4.0 \times 10^{-10}$ mol^{-1} min
D $V_{max} = 4.0 \times 10^{10}$ mol min^{-1}

11 The diagram below shows the Krebs Cycle.

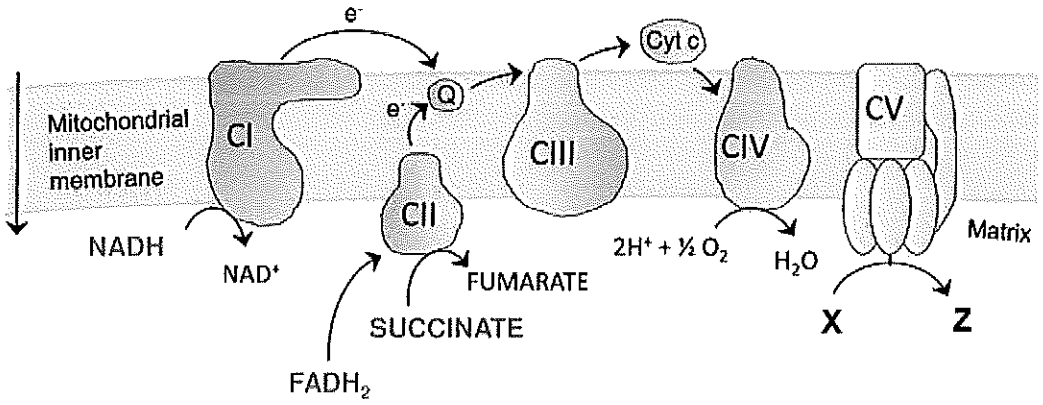


* This question paper is CONFIDENTIAL until the examination is over. CONFIDENTIAL*

Which of the following reactions produces NADH?

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

12 A sequence of simplified electron transport chain in mitochondria is shown in the diagram below.



The electron transport chain completes when X forms Z.
Which of the following protein complexes on the inner membrane of the mitochondrion functions as proton pump?

A CI,CIII, Q
B CII, CIII, CIV
C CIII, CIV, CV
D CI, CIII, CIV

13 Which processes occur in photosystem I?

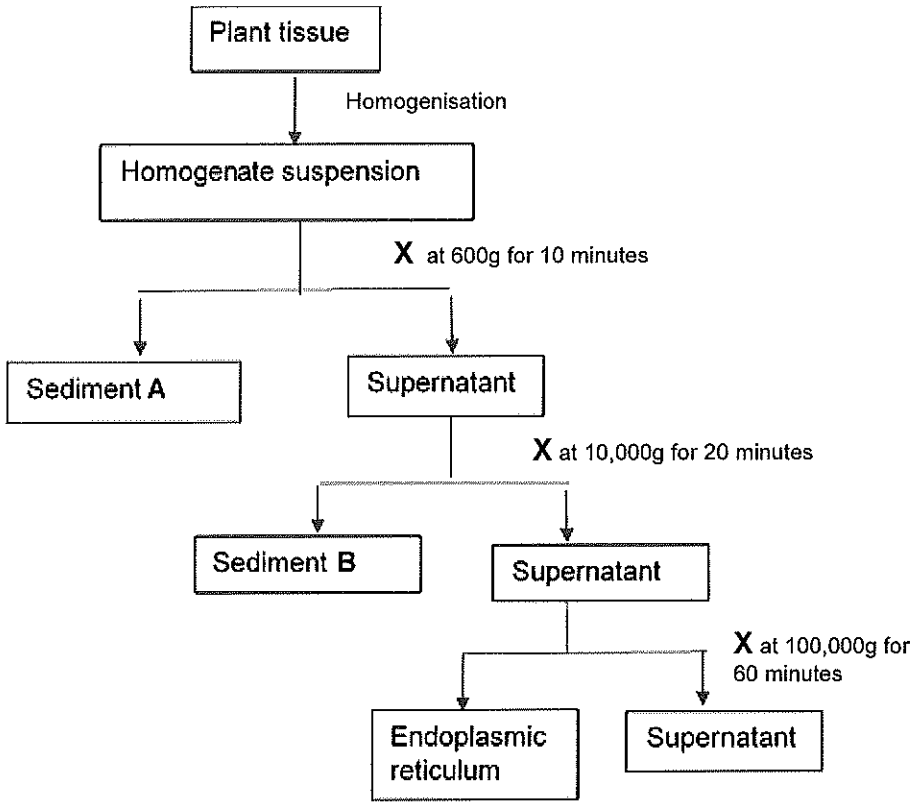
I The release of oxygen
II The photolysis of water
III The production of NADPH
IV The cyclic photophosphorylation

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

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

16 The flow chart below show the steps of the separation of organelles in the cell by using the cell differential technique that involve homogenisation process and process X.



(a) Name the process X.

[1 mark]

.....

(b) (i) State the name of one of the organelles found in the sediments A and B

[2 marks]

A: .....

B: .....

SECTION C [*30 marks*]

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

18 (a) Explain properties of water as essential component of living matter?
[6 marks]

(b) Explain how the structures of cellulose molecules are related to its functions in plant
[4 marks]

(c) Describe the basic principle of chromatography for pigments separation
[5 marks]

19 (a) Explain the structure of plasma membrane based on Singer's model
[8 marks]

(b) (i) Explain what is activation energy
[2 marks]

(ii) Explain how enzyme speeds up chemical reaction
[5 marks]

20 (a) Describe how 4 ATP and 2 NADH molecules are produced in the cytoplasm of muscle cells.
[5 marks]

(b) Explain what will happen to the high energy molecules that are produced in Krebs Cycle..
[7 marks]

(c) Describe the process that produce Carbon Dioxide in the bread making.
[3 marks]

MARKING SCHEME TRIAL YEAR BIOLOGY PAPER 1 STPM 2022

SECTION : A		
No	ANSWER	
1	B	The cohesive force of water is due to the hydrogen bonds between water molecules causing water molecules to stick together. Adhesive force is the bonding of the water molecules to another material such as the wall of the xylem.
2	C	
3	B	Parenchyma cells form packing tissues and have
4	D	The scanning electron microscope uses a narrow electron beam to scan the surface of the specimen to produce a three-dimensional view
5	C	
6	C	The rate of an enzymic reaction is determined by the rate of appearance of the product or rate of disappearance of the substrate. It is easiest to measure the rate of evolution of oxygen in this experiment
7	D	
8	C	Transferase (X) is a class of enzyme that catalyses the transfer of specific functional group from one molecule to another. X is transaminase. Lyase (Y) is an enzyme class where it catalyses the breaking of chemical bonds by means other than oxidation and hydrolysis. Y is decarboxylase
9	B	After vigorous activity, lactic acid is transported to the liver where it is converted back to pyruvate through the oxidation process. This reaction is catalysed by lactate dehydrogenase
10	B	$Y = -1/K_m$, $Y = -4 \times 10^4\ M^{-1}$ $-1/K_m = -4 \times 10^4\ M^{-1}$ $K_m = 0.25 \times 10^{-4}\ M$ $K_m = 2.5 \times 10^{-5}\ M$
11	D	Reaction III produces 1 GTP, which goes through substrate-level phosphorylation to produce 1 ATP for every succinyl-CoA. Reaction IV produces $FADH_2$ for every succinate
12	D	
13	D	Photosystem I is the second photosystem in the light-dependent reaction. In photosystem I, NADPH is produced from NAD. Photosystem I is a part of cyclic photophosphorylation.
14	D	In the regeneration of RuBP step of Calvin Cycle, Ribulose-5-phosphate is phosphorylated by phosphate ion from ATP to form Ribulose-1,5 bisphosphate
15	C	The first CO_2 acceptor is a 3-carbon molecule, phosphoenolpyruvate (PEP), which is present in the mesophyll cells. The enzyme responsible for this fixation is PEP carboxylase. The C_4 acid, oxaloacetate, is formed in the mesophyll cells. Oxaloacetate is then converted to malate or aspartate.
TOTAL MARKS :	15	

SECTION : C (30 MARKS)

No		Answers	Marks
18	(a)	***Explain properties of water as essential component of living matter?***	**(6 marks)**
		• **F1 Water has a high specific heat**	1m
		• P1 Heat is absorbed when hydrogen bonds break and is released when hydrogen bonds form.	1m
		• P2 This helps keep temperatures relatively steady, within limits that permit life.	1m
		• **F2 Water has high heat of vaporization.**	1m
		• P1 The evaporative loss of the most energetic water molecules cools a surface// evaporative cooling	1m
		• P2 Ice floats because it is less dense than liquid water.	1m
		• P3 This property allows life to exist under the frozen surfaces of lakes and polar seas.	1m
		• **F3 Water is an universal solvent**	1m
		• P1 because its polar molecules are attracted to ions and polar substances that can form hydrogen bond	1m
		• **F4 Water has high surface tension**	1m
		• P1 Hydrogen bonding keeps water molecules close to each other, and this cohesion helps pull water upward in the microscopic water-conducting cells of plants.	1m
		• **Any 3 pairs F and P**	**6 marks**
		Total	**4 marks**

18	(b)	***Explain how the structures of cellulose molecules are related to its functions in plant***	**4 marks**
		• P1 Based on structure, cellulose is a polymer of β glucose molecules forming a long unbranched chain	1m
		• P2 These chain arranged parallel to each other and	1m
		• P3 has cross linkages between them	1m
		• P4 This chain also has adjacent glucose molecules rotated by 180°	1m
		• **E1** provide stability/support to the plant	1m
		E2 Cellulose has the structure which is difficult to digest	1m
		Any 3P + 1E	4 marks
		Total	**4 marks**

TAMAT SAMPEL

Suka sampel ini?

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