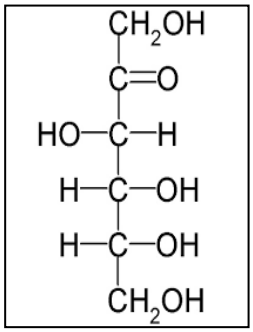
Section A [15 marks]

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

1. The structure of a sugar molecule is shown below.



Which sugar has the above structure?

A. Ribose
B. Glucose
C. Galactose
D. Fructose

2. Which of these molecules is not the example of lipid?

A. Stearic acids
B. Oestrogen
C. Lecithin
D. Keratin

3. If 45% of the bases in one strand of DNA are adenine and guanine, the percentage of thymine and cytosine in the complementary strand is

A. 15%
B. 35%
C. 45%
D. 55%

4. The palm oil which is cheaper in price tends to solidify when it is located in Cameron Highlands but remains in liquid form if it is located in Ipoh.
Which of these explains best about this situation?

A. In the cheaper priced oil, the percentage of phospholipid is higher than the percentage of the unsaturated fatty acids.
B. In the cheaper priced oil, the percentage of saturated fatty acids is higher than the percentage of the unsaturated fatty acids.
C. In the cheaper priced oil, the percentage of unsaturated fatty acids is higher than the percentage of the saturated fatty acids.
D. The higher percentage of polyunsaturated fatty acids is higher than the percentage of monounsaturated fatty acids.

5. Which of these organelles has only one membrane?

A. Nucleus
B. Lysosome
C. Golgi apparatus
D. Rough endoplasmic reticulum

6. Which of these organs will have the least percentage of smooth endoplasmic reticulum?

A. Liver
B. Sebaceous gland of skin
C. Testis
D. The fingernail

7. Which plant tissues present in an apple?

I. Tracheid tissue at the apple skin
II. Parenchyma tissue at the juicy fruit
III. Collenchyma tissue at the apple seed coat
IV. Schlerenchyma tissue at the apple seed coat

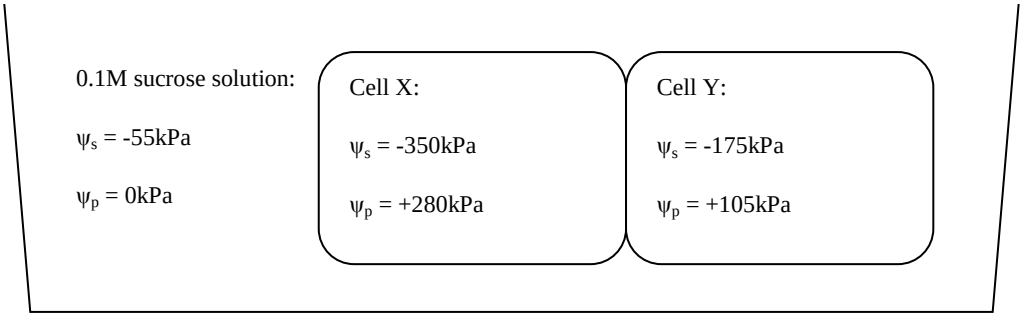
A. I and II
B. II and IV
C. II and III
D. I and IV

8. Which of these are can be diffuse through cell membrane by simple diffusion?

I. Amylase
II. Vitamin A, D, E and K
III. Oestrogen
IV. Glucose

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

9. Given are the solute potential and pressure potential of cell X and Y in 0.1M sucrose solution.



What is the direction of the water movement and what is the water potential of cell X when it reaches equilibrium?

	Direction of water movement	**Water potential of cell X at equilibrium**
A.	From cell X to cell Y	-70kPa
B.	From cell Y to cell X	-70kPa
C.	From sucrose solution to cell X	-62.5kPa
D.	From cell X to cell sucrose solution	-62.5kPa

10. Given that the intercept on y-axis of Lineweaver-Burk plot is 50 mol^{-1}Lsec. Which of these can be obtained from the data of y-intercept?
    A. Km = 50 mol/Lsec
    B. Km = 0.02 mol/Lsec
    C. V max = 50 mol/Lsec
    D. V max = 0.02 mol/Lsec

11.

> This class of enzyme can transfer the functional group from one molecule to another molecule.

This statement refer to enzyme class
    A. Lyase
    B. Hydrolase
    C. Transferase
    D. Oxidoreductase

12. At which phase of the Krebs cycle does the substrate level phosphorylation occurs?
    A. Citrate to isocitrate
    B. A-ketoglutarate to succinyl Co-A
    C. Oxaloacetate to citrate
    D. Succinyl Co-A to succinate

13. Which of these is true of the fate of NADH and $FADH_2$?
    A. the oxidised NAD^+ will be reused in the Krebs cycle and glycolysis in the stroma
    B. $FADH_2$ will release its electrons to plastoquinone in the electron transport chain
    C. 2 ATP will be formed from 1 molecule of NADH whereas 3 ATP will be formed from 1 molecule of $FADH_2$
    D. 2 molecules of hydrogen ions will be pumped from intermembrane space to the matrix during the electron transportation from $FADH_2$

14. Which of these occur during non-cyclic photophosphorylation?
    I. Production of ATP
    II. Photolysis of water
    III. Production of NADPH
    IV. Recycling of electron

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

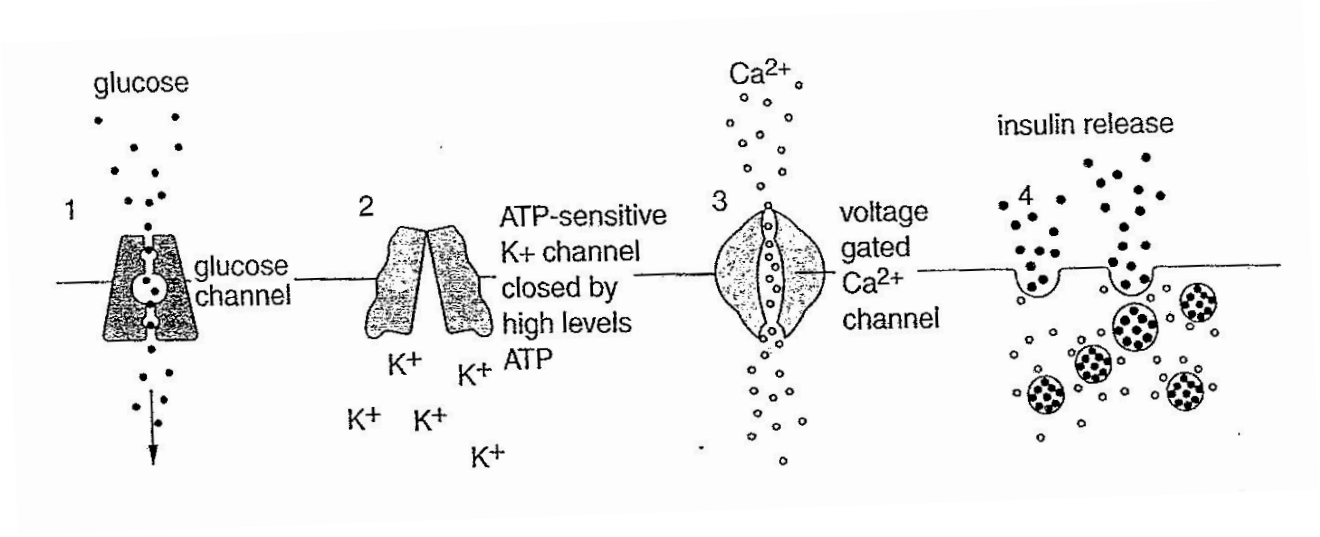
15. Which of these is the example of CAM plants?
    I. Maize
    II. Pineapple
    III. Cactus
    IV. Sugarcane

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

Section B [15 marks]

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

16. The passage of most molecules through membrane is regulated by proteins.
Diagram below shows four main steps in the release of insulin from beta cells, which involves three types of transmembrane protein.



a) Explain why transmembrane proteins are necessary for glucose, potassium ions and calcium ions to pass through cell surface membrane. [2 marks]

.....

.....

.....

b)

i. Suggest why there are no channels for insulin release across the membrane. [2 marks]

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.....

.....

ii. Name the process of insulin release across the membrane. [1 mark]

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

iii. Describe how insulin release across the membrane occurs. [3 marks]

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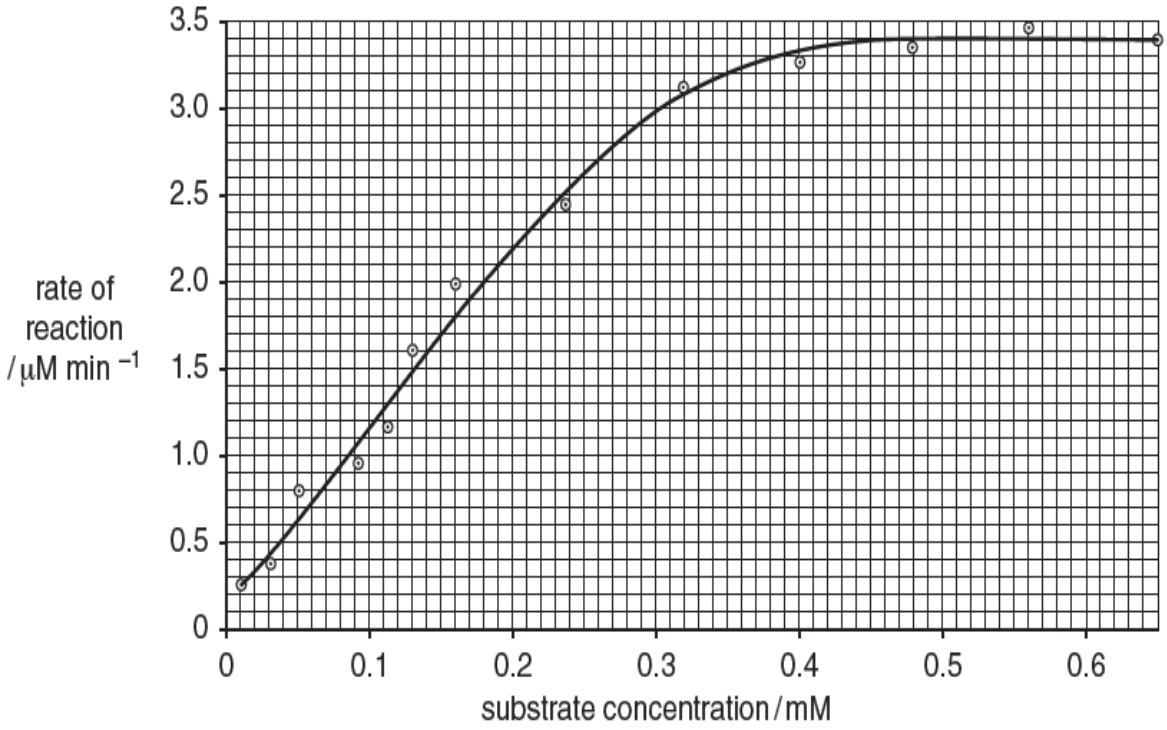
17. The enzyme catalase is found in many plant and animal tissues. The enzyme catalyses the decomposition of hydrogen peroxide, which is a toxic product of metabolism. The reaction is:

$$2H_2O_2 \xrightarrow{\text{catalase}} O_2 + 2H_2O$$

a) State the class of the enzyme. [1 mark]

.....

b) Graph below shows how the substrate concentration (hydrogen peroxide) affects the rate of reaction of catalase.



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Section C [30 *marks*]

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

18.

a)

i. Distinguish glycosidic bonds found in starch from those found in cellulose. [3 marks]

ii. Explain why these differences are of biological importance. [6 marks]

b) Describe the structure of DNA based on Watson and Crick model. [6 marks]

19.

a) Draw and label the structure of chloroplast found in C3 plant. [4 marks]

b) Describe how the structure of a chloroplast is related to its functions. [11marks]

20.

a) Describe the essential features of glycolysis and their role. [10marks]

b) Cyanide is a deadly poison and forms a complex with cytochrome. How does cyanide affect cellular respiration? [5 marks]

End of questions

Marking Scheme Biology Paper 1

Section A [15 *marks*]

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

Section B [15 *marks*]

16.	a)		1. the transmembrane protein posses specific receptor for each molecule / ion 2. control the movement of the molecule /ions into/out of cell 3. insoluble in lipid //hydrophilic molecules	1 1 1 Max : 2
	b)	i	1. produce in large amount 2. pack in vesicle	1 1
		ii	Exosytosis	1
		iii	1. Vesicle contain insulin move toward the plasma membrane 2. The vesicle fuse with the membrane 3. The vesicle open and release insulin	1 1 1
				Total: 8m
17.	a)		Oxidoreductases	1
	b)	i	3.4 μM min^{-1}	1
		ii	0.15 mM ½ Vmax // 3.4 / 2 = 1.7 μM min^{-1}	1 1
	c)		1. bind to, allosteric site / site other than active site 2. causes change in (shape of) active site 3. substrate cannot bind to enzyme active site 4. enzyme-substrate complex cannot form	1 1 1 1 Max : 3m
				Total: 7m

Suka sampel ini?

Kertas Percubaan STPM

Sem 1 · Biologi

- 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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