KEAT HWA SECONDARY SCHOOL

Alor Setar, Kedah

2 Feb 2021

BIOLOGY

PAPER 1 (964/1)

SIJIL TINGGI PERSEKOLAHAN MALAYSIA (STPM)

(MALAYSIAN HIGHER SCHOOL CERTIFICATE)

TRIAL EXAM 2021

One and a half hour

DO NOT OPEN THE QUESTION PAPER UNTIL YOU ARE TOLD TO DO SO

Instructions to Candidates

1. Answer **all** questions in Section A.
2. Answer **all** questions in Section B.
3. Answer **two** questions only in Section C. You may answer all the questions **but**, only the first **two** answers will be marked.
4. All workings should be shown. For numerical answers, units should be quoted wherever appropriate.
5. Answers may be written in either English or Malay.

Your information

Name : _____

Class : _____

Section A [15 marks]

Answer **all** questions in this section.

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1. Which of the following regarding the monosaccharides is correct?

Option	*Monosaccharides*	*Description*	*Example*
A	Triose	An important intermediate substance in photosynthesis.	Glyceraldehyde
B	Triose	A nucleotide.	Deoxyribose
C	Pentose	A carbon dioxide acceptor in photosynthesis.	Ribulose bisphosphate
D	Pentose	A coenzyme involved in the transfer of hydrogen during respiration.	Dihydroxyacetone

2. Which of the following is a function of the smooth endoplasmic reticulum?

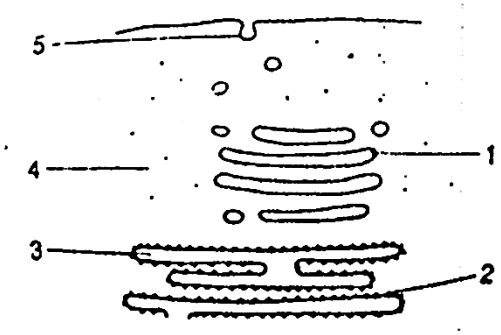
A. Breaking down old and used organelles.

B. Synthesis steroid hormones and detoxification.

C. Transporting proteins produced by ribosomes.

D. Attaching carbohydrates to proteins forming glycoprotein.

3. Radioactive amino acids are supplied to a cell that uses them to make insulin.



Which route will the radioactive amino acids take?

Option	*First to last*
A	4,2,3,1,5
B	4,3,2,1,5
C	2,3,4,1,5
D	5,1,4,2,3

4. Which of the following are present in prokaryotic cells?

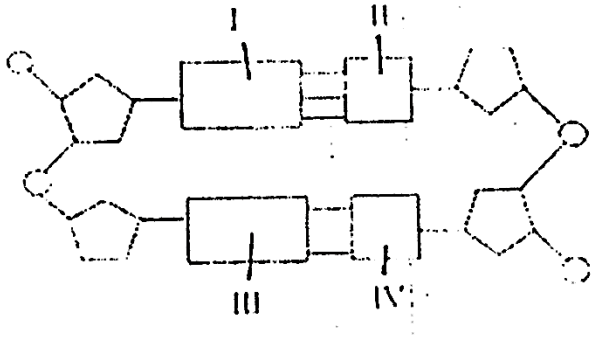
A. Cytoplasm, DNA, ribosomes.

B. Cytoplasm, DNA, mitochondria.

C. Chromosomes, mitochondria, ribosomes.

D. Chloroplast, cytoplasm, DNA.

5. The diagram below shows a short section of DNA.
If the nitrogenous base labelled I is a purine, what could the nitrogenous base labelled II, III and IV be?

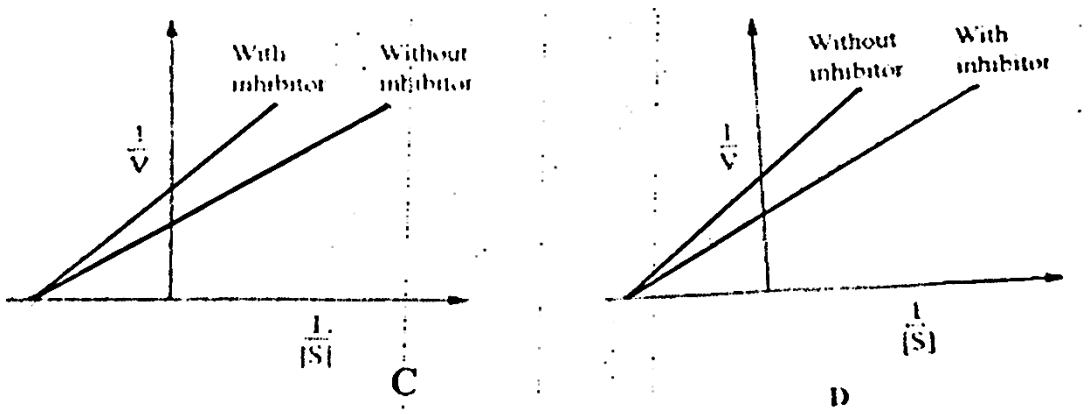


Option	*II*	*III*	*IV*
A	C (Cytosine)	A (Adenine)	T (Thymine)
B	T (Thymine)	G (Guanine)	C (Cytosine)
C	A (Adenine)	C (Cytosine)	G (Guanine)
D	G (Guanine)	T (Thymine)	A (Adenine)

6. Two disaccharides are cellobiose and sucrose. Cellobiose is formed from two molecules of glucose, while sucrose is formed from fructose and glucose.

Which row shows the molecular formulae of the two disaccharides?

Option	*Cellobiose*	*Sucrose*
A	$C_{12}H_{22}O_{11}$	$C_{12}H_{22}O_{11}$
B	$C_{12}H_{22}O_{11}$	$C_{12}H_{24}O_{12}$
C	$C_{12}H_{24}O_{12}$	$C_{12}H_{22}O_{11}$
D	$C_{12}H_{24}O_{12}$	$C_{12}H_{24}O_{12}$



10. Which of the following is not a property of a catalyst?

A. A catalyst reduces the activation energy of a reaction.

B. A catalyst lowers the free energy of the reactants.

C. A catalyst does not change as a result of the reaction.

D. A catalyst works in both the forward and reverse directions of a reaction.

11. Which of the following is true?

Option	*Type*	*Reaction*	*Example*
A	Oxidoreductase	Sucrose + Water → Fructose + Glucose	Sucrase
B	Transferase	Glutamic acid + Pyruvic acid → α-ketoglutarate + Alanine	Aminotransferase
C	Ligase	Pyruvic acid → Ethanol + CO_2	Pyruvate decarboxylase
D	Lyase	Amino acid + specific tRNA + ATP + NADH + H^+ → Aminoacyl-tRNA + ADP + P_i + NAD^+	Aminoacyl-tRNA synthetase

12. 38 ATP molecules are produced by the complete oxidation of glucose in the mitochondria.

How many ATP molecules are produced from NADH?

A. 34

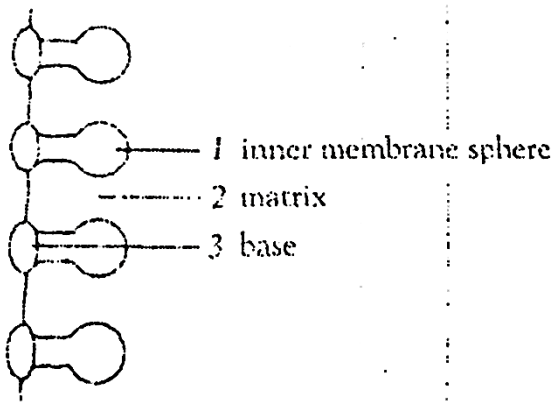
B. 36

C. 32

D. 30

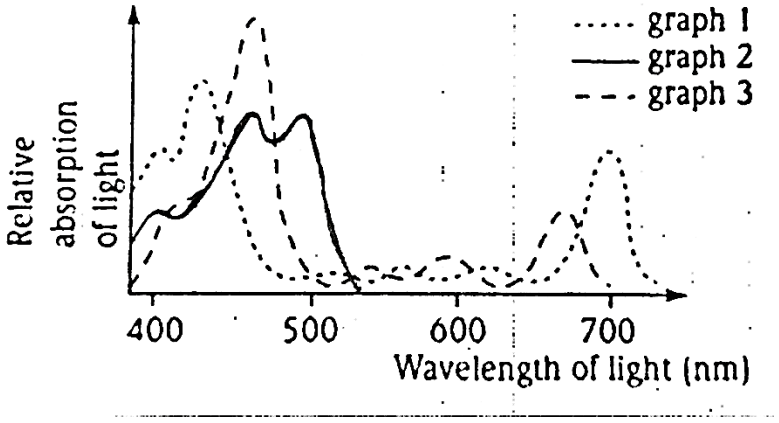
13. The diagram shows stalked particles on part of a crista membrane in a mitochondrion.

What occurs in each of the numbered regions?



Option	*1*	*2*	*3*
A	ADP synthesis	Electron transport	Krebs cycle
B	ADP synthesis	Glycolysis	Krebs cycle
C	ATP synthesis	Krebs cycle	Glycolysis
D	ATP synthesis	Krebs cycle	Electron transport

14. The graph below shows the absorption spectra for different photosynthesis pigments. The x-axis shows the wavelength of light and the y-axis shows the percentage of light absorption.



Select the correct combination.

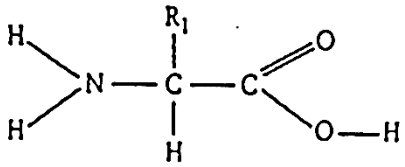
Absorption spectrum			
Option	*Chlorophyll a*	*Chlorophyll b*	*Chlorophyll c*
A	1	2	3
B	1	3	2
C	2	1	3
D	2	3	1

Section B [15 marks]

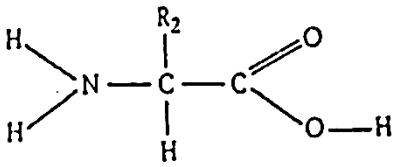
Answer **all** questions in this section.

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16. The diagram below shows the structural formula of two amino acids, P and Q.



Amino acid *P*



Amino acid *Q*

(a) Name two elements, other than carbon, hydrogen and oxygen which may be found in the R_1 and R_2 groups.

[2 marks]

(b) During protein synthesis, certain atoms from P and Q may be linked to form new molecules.

(i) On the diagram above, draw a circle around the atoms that are removed when P and Q are bonded together.

[1 mark]

(ii) Draw a line connecting the atoms in P and Q that are linked together.

[1 mark]

(iii) Name the bond that is formed by this reaction.

[1 mark]

(c) Explain how the different properties of R_1 and R_2 groups are related to the structure and functions of protein.

[3 marks]

Section C [30 marks]

Answer **two** questions only in this section.
You may answer all the questions but, only the first two answers will be marked.

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18. (a) State **five** functions of steroid in the human body.

[5 marks]

(b) Describe the structure of lecithin and its importance in the structure of the plasma membrane.

[10 marks]

19. (a) With the aid of a diagram, describe the structure of a mitochondrion.

[6 marks]

(b) Describe by giving details, how one glucose is converted to two molecules of pyruvate.

[9 marks]

20. (a) Differentiate the leaves of C_3 and C_4 plants anatomically.

[5 marks]

(b) Describe the pathway taken by atmospheric carbon dioxide until it is used in the synthesis of hexose sugars in C_4 plants.

[10 marks]

END OF QUESTIONS
GOOD LUCK

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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