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OVERMUGGED
O Level Mock Paper

SCIENCE (CHEMISTRY, BIOLOGY)

Paper 1 Multiple Choice

5078/01
September 2021
1 hour

INSTRUCTIONS TO CANDIDATES

There are **20** questions in this paper. Answer **all** questions. For each question, there are 4 possible answers, **A, B, C and D**.

Choose the one you consider correct.

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.

The use of an approved scientific calculator is expected, where appropriate.

Questions in reference to Admiralty Secondary School, Xinmin Secondary School and CHIJ St Joseph. Credits to these school ☺

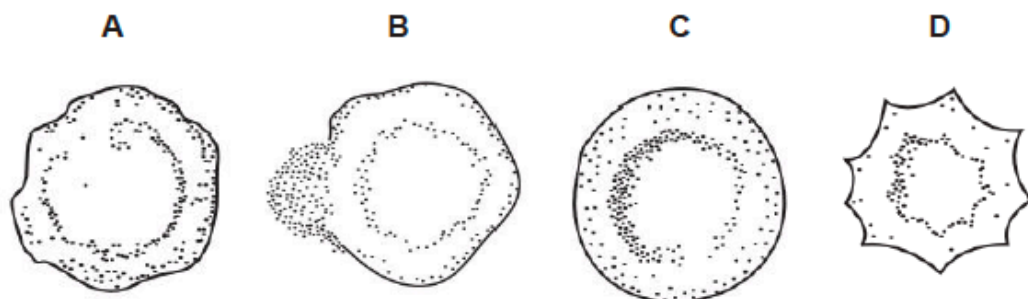
21 The diagram shows four cells.



Which cells are involved in transport?

- A 1 and 2
- B 1 and 3
- C 2 and 4
- D 3 and 4

22 Some red blood cells were placed in distilled water and others were placed in three salt solutions of different concentrations. Which diagram shows the appearance of a cell after being placed in a solution of higher water potential for a short time?



23 Which of these processes require energy from respiration?

	diffusion	osmosis
A	✓	✓
B	✓	×
C	×	✓
D	×	×

✓ energy required

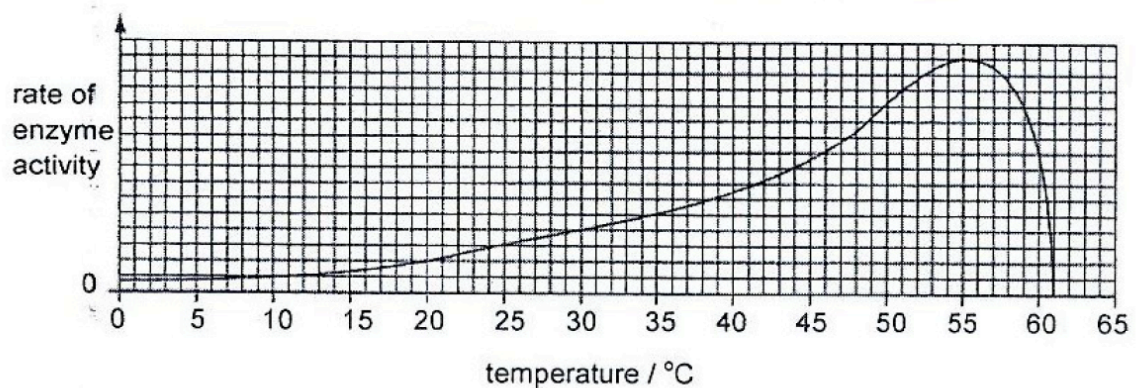
× energy not required

- 24 A student is tasked to determine if a food sample contains carbohydrates. Which of the following food test(s) should he carry out?

I Benedict's test II Biuret test III Ethanol-emulsion test IV Iodine test

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

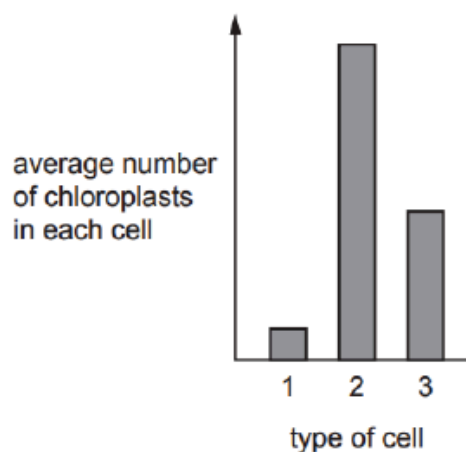
- 25 The graph shows how temperature affects the rate at which an enzyme works.



What does the graph show about this enzyme?

- A The enzyme is denatured by temperatures above 65 °C.
 - B The enzyme is denatured by temperatures below 8 °C.
 - C The enzyme works fastest at 48 °C.
 - D The rate of enzyme activity doubles when the temperature is raised from 10 °C to 20 °C.
- 26 A person has his gall bladder removed. Which statement is correct?
- A He cannot eat carbohydrates.
 - B He can eat fat only in small amounts.
 - C He can eat only liquid food.
 - D He must not eat more than one large meal a day.

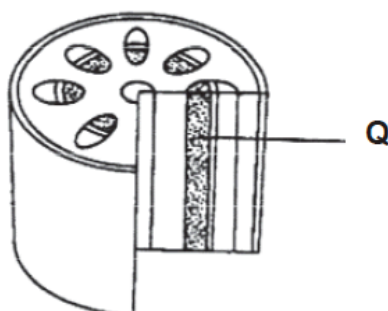
- 27 The bar chart shows the average number of chloroplasts in each of three different types of leaf cell.



What are the three types of cell?

	1	2	3
A	guard cell	palisade mesophyll cell	spongy mesophyll cell
B	palisade mesophyll cell	spongy mesophyll cell	guard cell
C	spongy mesophyll cell	guard cell	palisade mesophyll cell
D	spongy mesophyll cell	palisade mesophyll cell	guard cell

- 28 The diagram below shows a section through a stem. Samples of the contents of structure Q were tested.

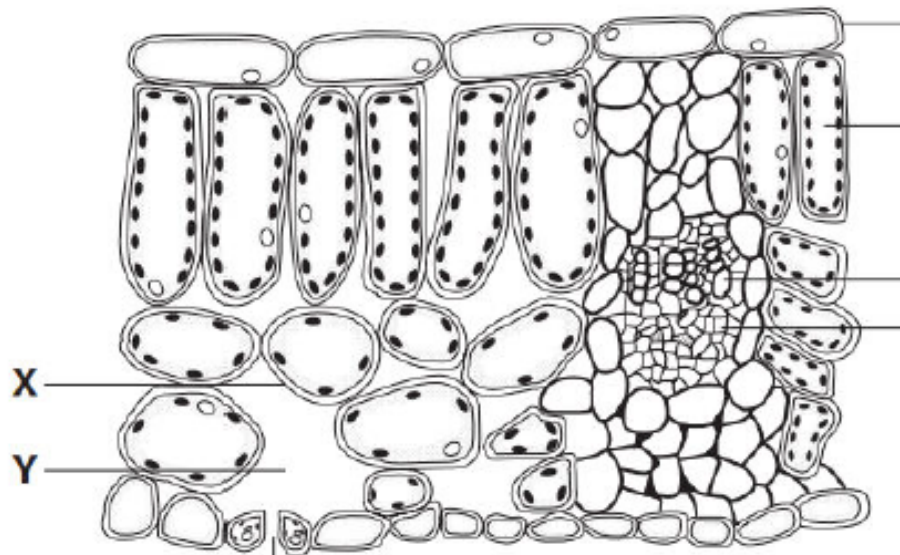


Which results are expected?

	Benedict's reagent	Iodine solution
A	+	+
B	+	-
C	-	+
D	-	-

Key

+ denotes positive results
- denotes negative results

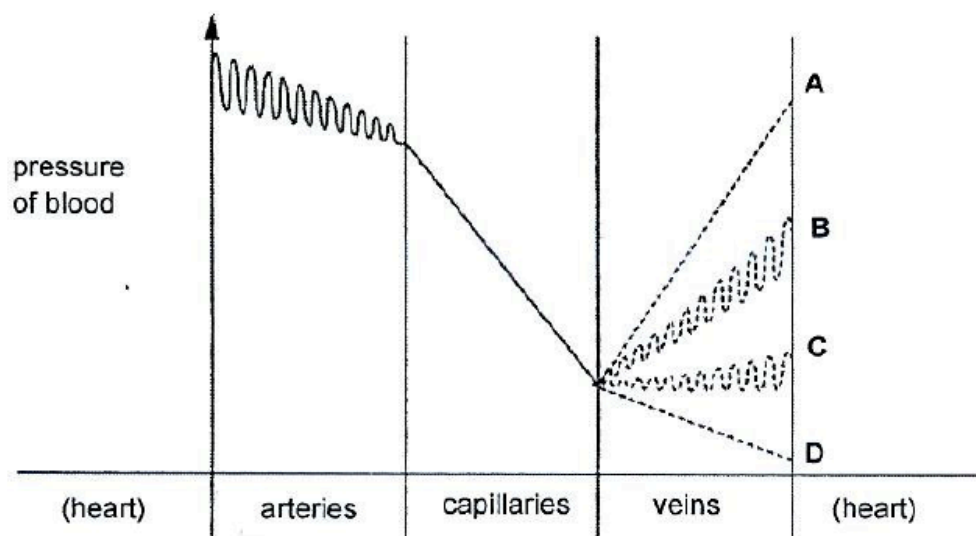


- 29 The leaf is losing water to the atmosphere. What processes are occurring at X and Y?

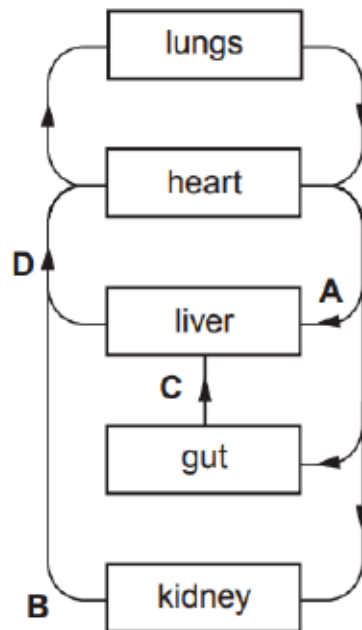
	X	Y
A	diffusion	evaporation
B	evaporation	diffusion
C	osmosis	transpiration
D	transpiration	osmosis

- 30 The diagram shows the pressure of blood after it leaves the heart and passes through arteries and then capillaries.

Which dotted line shows the pressure of blood as it flows through veins before returning to the heart?



- 31 The diagram shows a plan of part of the human circulatory system. In which vessel are the breakdown products of alcohol first found?

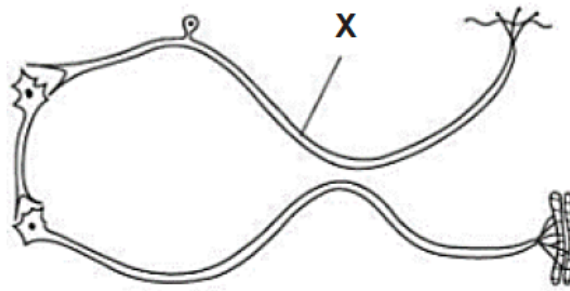


- 32 The table shows some of the features of respiration.

Which row is correct for anaerobic respiration in humans?

	energy remaining in products	amount of energy released	releases carbon dioxide
A	high	low	no
B	high	high	always
C	low	low	no
D	low	high	always

- 33 The diagram below shows how nerve impulses are transmitted along three neurons.

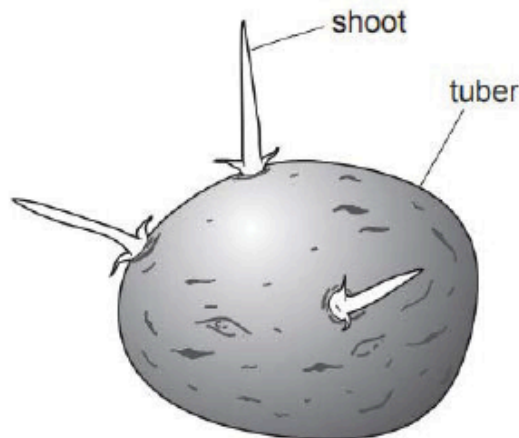


If a nerve block is administered at point X, how would the person respond to touching a hot object?

- A He experiences pain and withdraws his hand from the hot iron involuntarily.
 - B He experiences pain but does not withdraw his hand from the hot iron.
 - C He does not experience pain and does not withdraw his hand from the hot iron.
 - D He does not experience pain but withdraws his hand from the hot iron involuntarily.
- 34 A girl stands 10 metres away from a sign and can see it clearly. She walks towards the sign and stops 0.5 metres from it. Which changes occur in her eyes so that the sign is still in focus?

	ciliary muscles	suspensory ligament	lens becomes	results in light rays refracted
A	contract	slacken	thicker	more
B	contract	tighten	thinner	less
C	relax	slacken	thinner	less
D	relax	tighten	thicker	more

- 35 The diagram shows a potato tuber that developed from the stem of a parent potato plant. Three shoots are starting to grow from the tuber.



How do the genotypes of the shoots compare with the genotypes of the tuber and of the parent?

- A They are all different.
 - B They are all identical.
 - C The shoots are identical to each other, but are different from the tuber and the parent.
 - D The shoots are identical to the tuber, but are different from the parent.
- 36 A woman ovulates on the 7th of March.
In which week will her next menstrual period begin?

week	March						
	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
	-	-	-	1	2	3	4
A	5	6	7	8	9	10	11
B	12	13	14	15	16	17	18
C	19	20	21	22	23	24	25
D	26	27	28	29	30	31	

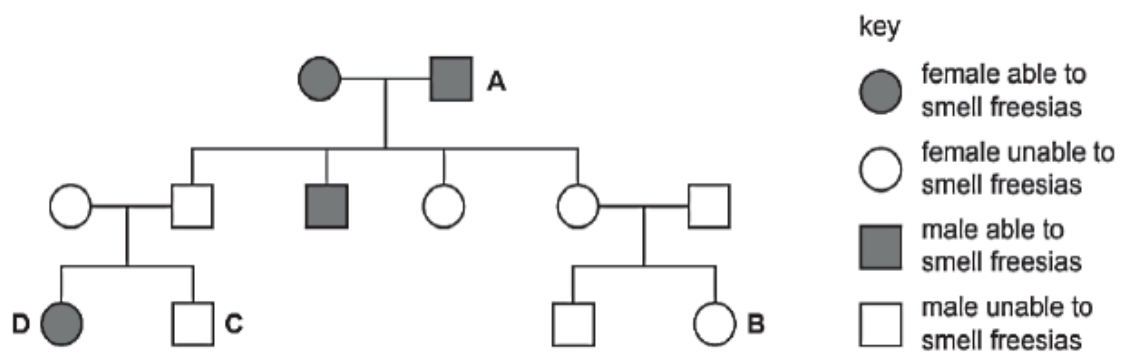
37 Which of the following shows the correct pathway which a sperm travels upon entering the female body?

- A ovary → urethra → vagina
- B ovary → vagina → uterus
- C vagina → oviduct → uterus
- D vagina → uterus → oviduct

38 Which term is defined as a length of DNA that codes for a protein?

- A amino acid
- B chromosome
- C gene
- D nucleotide

39 The family tree shows the inheritance of the ability to smell flowers called freesias. The allele for the ability to smell freesias is dominant. Which individual's symbol is not correct?



40 In mice, the allele for brown fur is dominant to the allele for grey fur.

What would be the phenotypes of a cross between a mouse heterozygous for brown fur and a mouse with grey fur?

- A** 100% with brown fur
- B** 100% with grey fur
- C** 25% with brown fur and 75% with grey fur
- D** 50% with brown fur and 50% with grey fur