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BIOLOGY

FOUNDATIONS IN BIOLOGY

Level & Board	OCR (A-LEVEL)
TOPIC:	BIOLOGICAL MOLECULES - PAG'S
PAPER TYPE:	QUESTION PAPER - 1
TOTAL QUESTIONS	07
TOTAL MARKS	/29

Biological Molecules – PAG's - 1

1.

(a) A student used materials from a beaker containing amylase and starch to conduct four tests. If the response persisted, which row (A to D) would display the accurate findings? **(1)**

	Iodine test	Benedict's test	Biuret test	Emulsion test
A	negative	positive	negative	positive
B	positive	negative	positive	positive
C	positive	positive	positive	negative
D	positive	positive	negative	negative

2.

(a) A single sugar solution that was unknown was put to the test. Table 9.1 contains the recorded results. **(1)**

Colours observed after testing	
Benedict's test for reducing sugars	**Benedict's test for non-reducing sugars**
blue	brick red

Table 9.1

Identify the unknown sugar.

A: Fructose ☐

B: Lactose ☐

C: Sucrose

D: Glucose

3.

(a) A vet is concerned that a llama is unwell. The vet suspects there may be hemoglobin in the urine of the llama.

Explain how the vet could confirm this suspicion. **(2)**

4.

Using the following technique, a student tried to determine the amount of sucrose present in the leaves of a holly bush, Ilex aquifolium:

• A leaf was taken out of the bush and crushed using a mortar and pestle.

Following filtering of the mixture, 1 cm3 of the leaf filtrate was added to a boiling tube.

• The boiling tube was filled with 1 cm3 of Benedict's solution at a known concentration.

• For five minutes, the boiling tube was heated slowly.

• The precipitate was taken out of the solution by filtering it.

• A calibrated colorimeter was used to measure the amount of light that was transmitted through the solution.

• The filter used was blue.

• Using a calibration curve for known sucrose concentrations, the % transmission was translated to a sucrose concentration.

(a) Explain why the student's method is invalid. **(4)**

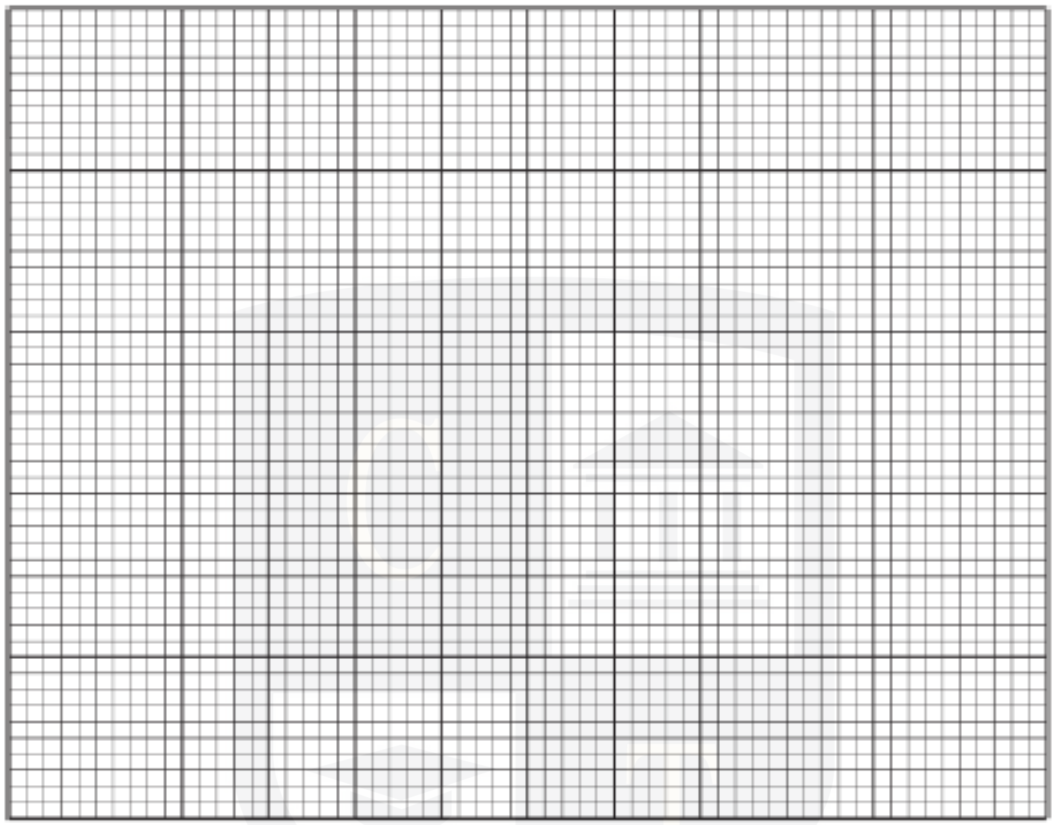
5.

A group of students made the decision to look into how much glucose was in three different kinds of fruit juice. They calibrated a colorimeter using known glucose solution concentrations by performing Benedict's test on them. Table 6 displays the calibration findings for them.

glucose concentration (mmol dm–3)	% absorbance			
	Trial 1	Trial 2	Trial 3	Mean
1.0	67	68	65	67
2.0	54	52	55	54
3.0	47	46	48	47
4.0	41	41	40	41
5.0	27	25	25	26
6.0	16	16	17	16

Table 6

(a) Plot the mean percent absorbance at each concentration of glucose on a graph. **(3)**



(b) Three distinct fruit juices with the labels A, B, and C were given to the pupils. Every fruit juice was subjected to the Benedict's test, and samples were made ready for the colorimeter. Describe the method by which the students will utilize the calibration curve to determine the fruit juices' glucose concentration. **(2)**

(c) What are the biological activities of glucose? **(2)**

6.

The following hypothesis was written by the students: "Fruit juice will be sweeter the higher the concentration of glucose in it."

(a) Explain how, without the use of a colorimeter, you would conduct a controlled experiment to test this hypothesis**. (4)**

(b) Provide one explanation why the experiment's findings might not be consistent with the students' theory**. (2)**

7.

(a) Why are only 8 drops of urine added in Benedict's test? **(2)**

(b) What type of biological molecule does Benedict solution detect? **(2)**

(c) Why is water bath used in Benedict's test? **(2)**

(d) Do ketones give Benedict's test? **(2)**

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