

P530/2

Biology
Paper 2
July/Aug, 2023
2½ Hours



UNNASE JOINT MOCK EXAMINATIONS

UGANDA ADVANCED CERTIFICATE OF EDUCATION RESOURCEFUL EXAMINATIONS

BIOLOGY PAPER 2

(THEORY)

TIME: 2 HOURS 30 MINUTES

Instruction to candidates

- This paper consists of section A and B;
- Answer question one in section A plus any three from section B.
- Candidates are advised to read the questions carefully, organised their answers and present them precisely and logically, illustrating with well labelled diagrams wherever necessary.

Question	Marks
Total	

SECTION A: (40 MARKS)

Compulsory question

1. Figure 1 shows the changes that occur in the concentration of insulin and glucose in the blood stream of a person who had fasted overnight and then swallowed 75g of glucose.

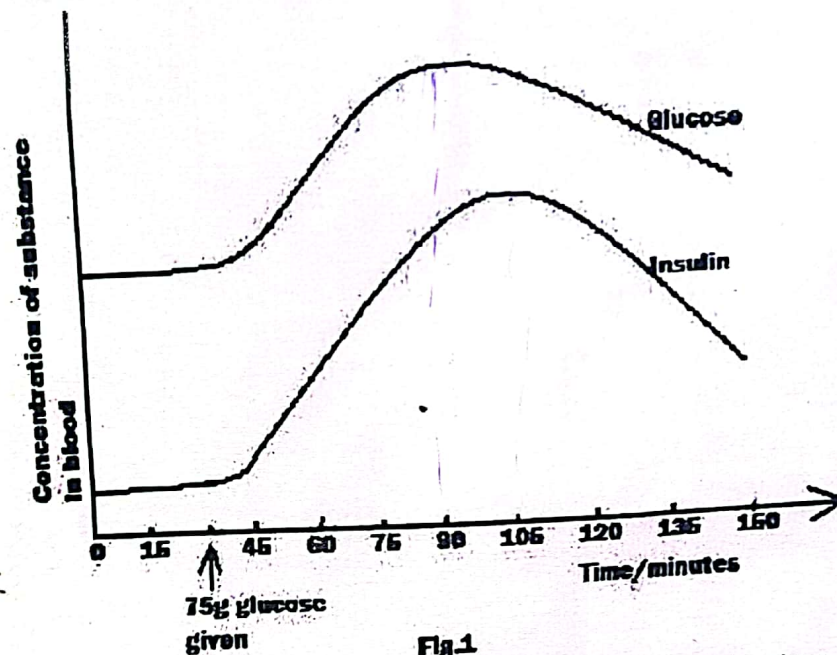


Fig.1

- Compare the levels of glucose and insulin after swallowing glucose. (06 marks)
- Explain the changes in the concentration of;
 - Glucose. (04 marks)
 - Insulin. (06 marks)
- Explain how the concentration of insulin would change if the person engaged in an exercise. (03 marks)
- Figure 2 shows the changes in the amount of liver glycogen and glucagon concentration in blood of a person during prolonged exercise.

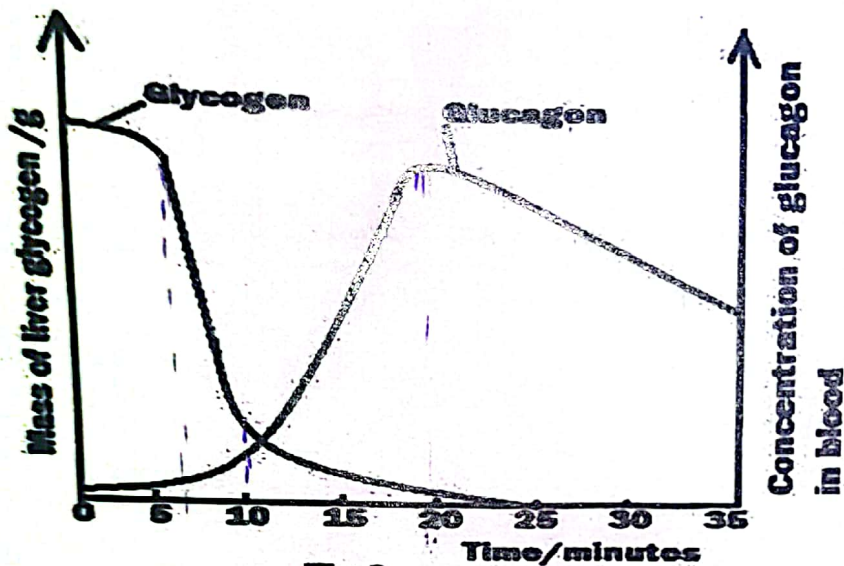


Fig. 2

- (i) Describe the effects of prolonged exercise on the amount of glycogen and the concentration of glucagon in blood. (04 marks)
- (ii) Explain the trend in the mass of glycogen and glucagon in blood. (12 marks)
- (e) Suggest how continuous supply of glucose is ensured after the 25th minute. (05 marks)

SECTION B: (60 MARKS)

Attempt any three questions

2. (a) What is meant by the term eutrophication? (02 marks)
- (b) Explain the causes of eutrophication. (06 marks)
- (c) Explain the;
 - (i) Adaptations of water hyacinth for its survival as a successful weed. (06 marks)
 - (ii) Ecological effects of water hyacinth on water. (06 marks)
3. (a) Compare polyploidy and aneuploidy. (06 marks)
- (b) Give the conditions for emergence of polyploids in plants. (04 marks)
- (c) Explain the following;

- (i) Failure to develop an effective vaccine against plasmodia species which causes malaria. (05 marks)
- (ii) How man influences the process of **speciation**. (05 marks)
4. (a) Describe how a carbon dioxide molecule in the mesophyll cells of a C₃ plant can be converted into a triglyceride. (09 marks)
- (b) Explain the **physiological** and **ecological** advantages C₄ plants have over C₃ plants. (06 marks)
- (c) Explain the **physiological significance** of chloroplast. (05 marks)
5. (a) Describe the role of the **aortic** and **carotid bodies** in the control of the respiratory rate in man. (06 marks)
- (b) Describe how the respiratory rate in a cell is controlled. (07 marks)
- (c) Distinguish between **Kreb's cycle** and **glycolysis**. (04 marks)
- (d) Explain why ATP is a suitable energy store in cells. (03 marks)
6. (a) Describe the **physiological significance** of monosaccharides. (06 marks)
- (b) Describe the structure of the following polysaccharides;
- (i) Starch. (06 marks)
- (ii) Cellulose (04 marks)
- (c) Explain why carbohydrates are able to form a variety of carbohydrates. (04 marks)

END/AB 2023