P530/2

BIOLOGY (THEORY)

PAPER 2

AUGUST 2024

$2\frac{1}{2}$ HRS

MEBU EXAMINATIONS CONSULT

Uganda Advanced Certificate Of Education

MOCK EXAMINATIONS 2024

BIOLOGY (THEORY)

PAPER 2

2 HOURS 30 MINUTES

INSTRUCTIONS TO CANDIDATES

- This paper consists of **six** questions
- Answer question **one** in section **A** plus **three** other questions from section **B**.
- Candidates are advised to read carefully, organize their answers and present them precisely and logically, illustrating with well labelled diagrams where necessary.

SECTION A (40 MARKS)

1. The figures**2.1** and **2.2** below show the concentration of both glucose and insulin in the blood plasma before and after a glucose drink. Study them carefully and answer the questions that follow.

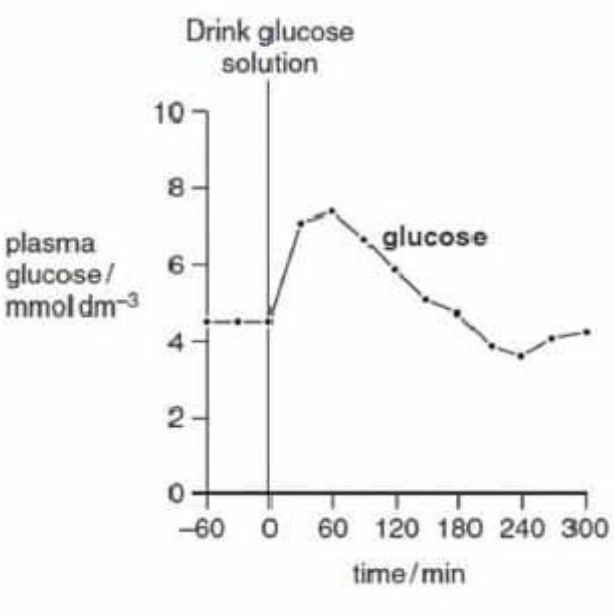

Fig 2.1

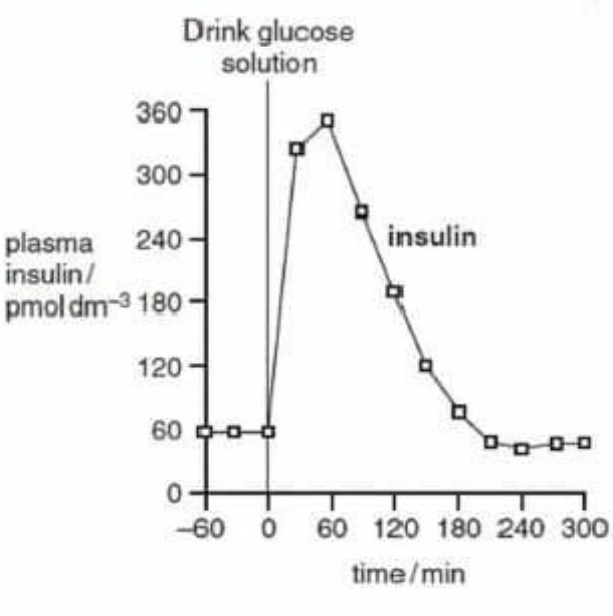

Fig 2.2

(a).Describe the changes in the blood -glucose concentration after a glucose drink. (07$\frac{1}{2}$marks)

(b) From the figures above, explain how changes in blood-glucose concentration cause;

(i).an increase in concentration of insulin in blood plasma. (07 marks)

(ii) .a subsequent fall in concentration of insulin in blood plasma. (05 marks)

(c).Describe the role of the hormone, glucagon in maintaining the concentration of blood glucose levels constant. (06$\frac{1}{2}$marks)

(d). Of what significance is it to maintain blood- glucose levels constant? (09marks)

(e) Apart from the concentration of glucose in blood, state any other factors which must be regulated in the internal environment of a living organism. (05 marks)

SECTION B (60 MARKS)

Answer three questions from this section.

2. (a) Define the term inhibiting genes. (01 mark)

(b).Differentiate between chromosomal aberration and hybrid sterility. (02 marks)

(c) A woman had a total of only four sons. On thorough examination of the medical doctors, it was found out that three of the sons were normal and one was a hemophiliac. The husband to this woman wants the doctors to help him know the nature of the possible genotypes their couple is most likely to have. As one of the medical doctors, help them to address their query. (12 marks)

(d)Phenylketonuria (PKU) is a disease that has been evident both in the young and adults. Outline the effects of this disease in patients (05 marks).

3(a) Define the following terms:

(i).Azoospermia. (01 mark)

(ii).Contraception. (01 mark)

(iii) .Capacitation. (01 mark)

(b). Describe the milk ejection reflex in a female mother. (06 marks)

(c) .Define the term micro propagation. (01 mark)

(ii). Explain the pros of micro propagation. (10 marks)

4(a). Explain the steps involved in the production of energy in the Tri-carboxylic Acid cycle. (10 marks).

(b).Describe the structure and the roles of Adenosine Triphosphate in cells. (10 marks).

5(a) (i).Differentiate between facilitation and summation as applied to coordination in animals. (02 marks)

(ii).Outline the three possible ways of removing neurotransmitters from the synaptic cleft.

(03 marks)

(b).Describe the structure of the retina. (09 marks)

(c)(i).Define the term vernalisation. (01 mark)

(ii).Outline the importances of photo morphogenesis in plants. (05 marks)

6(a).Explain the meaning of the term amoeboid movement. (01 mark)

(b).Outline the importance of amoeboid movement. (01 mark)

(c) Describe the sol-gel-sol transformation of the cytoplasm of any named unicellular organism as outlined by Mast (1925). ($14\frac{1}{2}$ marks)

(d) Define the term tetany as applied to muscles. (02 marks)

END