

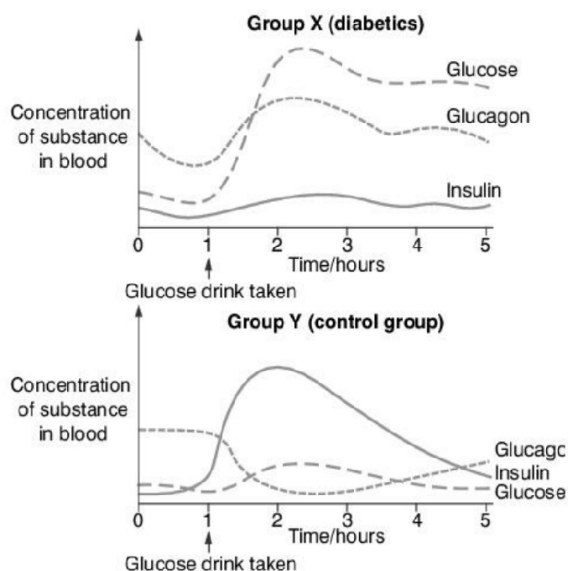
DEPARTMENT OF BIOLOGY SET 5 PRE-MOCKS EXAMS

Instructions

Attempt Number 1 of section A and choose 3 other questions from section B
Neat work carries extra marks

SECTION A (40 marks)

1. An experiment was carried on two different groups of people. Group X had Type I diabetes while group Y did not (control). Every after 15 minutes blood samples were taken from all members of both groups and the mean levels of insulin, glucagon and glucose were calculated. After 1 hour every person was given a glucose drink. The results are shown in the figures below.



Study the graphs above carefully and answer the questions that follow.

- a) Describe the variation of glucose levels in group X and group Y. (07 Marks)

b) Explain,

- i) The changes in blood glucose levels in group Y after the drink is taken. ***(13marks)***
- ii) The differences in blood glucose levels in group X compared to group Y. ***(07marks)***
- c) State the difference(s) between group X and Y in the way insulin is secreted after taking the drink. ***(03 marks)***
- d) Suggest the reason why the concentration of glucose falls during the first hour. ***(03 marks)***
- e) Suggest what might happen to the blood glucose concentration of group X if they had no food intake over the next 24 hours ***(05marks)***
- f) Name the hormone other than insulin and glucagon that is involved in regulating blood sugar levels. ***(02marks)***

SECTION B (60 Marks)

Attempt only three questions

- 1. (a) Explain what is meant by negative feed back mechanism. (04marks)
- (b) Giving two examples of positive feed back mechanism, explain why positive feedback mechanism are rare in biological processes. (06 marks)
- (c) Explain how tissue fluid is formed. (10 marks)
- 2. (a) Explain the term "Natural Selection " (03 Marks)
- (b) Explain the difference between directional and stabilising selection. (07 marks)
- (c) A severe cold in 1996 killed over 50% of Swallows (a certain bird species) living on a cliff in Jaana. Biologist collected near 2000 dead birds from beneath the cliff and also captured around 1000 living birds. By measuring the body mass of birds, they found out that birds with mass larger than the average survived the cold spell better than those whose mass was below the average body mass.

Explain which type of selection was taking place here. (10 marks)



3. (a) Explain the role of T- lymphocytes in primary immune response. (06 marks)
(b) Explain the structure of an antibody. (08marks)
(c) Explain the functions of cell surface membrane in immunity. (06 marks)
4. (a) Explain the functions of amino acids. (08 marks)
(b) Describe how amino acids form a polypeptide (09 marks)
(c) Explain the effect of temperature on enzymes. (03 marks)
5. (a) Describe the structure of chlorophyll. (07 marks)
(b) Explain how palisade mesophyll cells of a leaf are adapted for photosynthesis (08 marks)
(c) Outline the advantages of C4 have plants over C3 plants. (05 marks)

END

