P530/2
Biology
Paper 2
Jan/Feb, 2021
2 ½ hours

UGANDA MUSLIM TEACHERS' ASSOCIATION

UMTA RESOURCE PAPERS – 2021

NAME……..

INDEX NO…….....SIGNATURE……....

UGANDA ADVANCED CERTIFICATE OF EDUCATION

Biology

Paper 2

2 hours 30minutes

INSTRUCTIONS TO CANDIDATES:

*Answer question one in section **A** plus three others from section **B**.*

Candidates are advised to read the questions carefully, organize their answers and present them precisely and logically, illustrating with well labeled diagrams where ever necessary.

Write on the answer sheet, your name, index number and the questions attempted in their order as shown in the table.

Question	Marks
Total	

SECTION A (40 MARKS)

1. The figure 1 below shows the effects of non-competitive and competitive inhibitors on the rate of an enzyme catalysed reaction. Also included in the experiment is the rate of the enzyme when there is no inhibitor. Temperature of the reaction was maintained constant at optimum. Study the figure and answer the questions that follow.

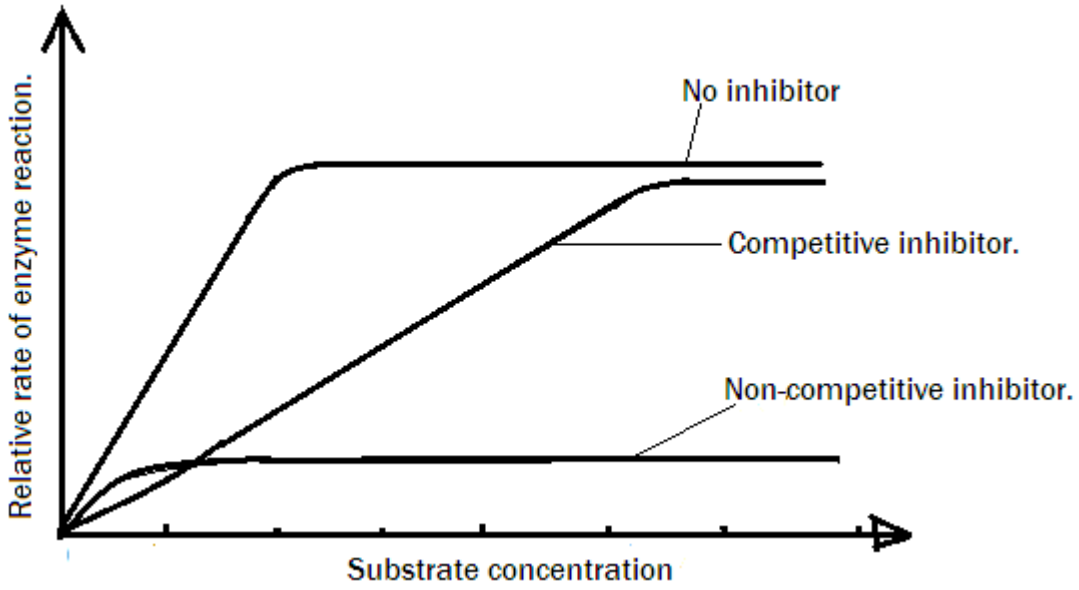

Figure 1.

(a)Compare the rate of enzyme reactions for competitive and non-competitive inhibition at varying substrate concentration. (09 marks)

(b) Explain the trend of the rate of enzyme reactions under,
(i) Competitive inhibitor. (12 marks)
(ii) Non-competitive inhibitor. (08 marks)

(c) Explain why,
(i) The rate of reaction was determined when there was no inhibitor. (04 marks)
(ii) It is was important to keep temperatures constant at optimum. (04 marks)

(d) Explain briefly useful applications of Inhibitors. (03 marks)

SECTION B (60 MARKS)

2. (a) Distinguish between action and absorption spectra in plants. (02 marks)

(b) Describe mechanisms of synthesis of ATP molecules in the thylakoids of chloroplasts of a green plant. (09 marks)

(c) Explain how photorespiration is avoided by C4 plants. (09 marks)

3. (a) Discuss the structures of the cochlea for its efficient functions. (09 marks)

(b) Explain the inhibition of transmission of an impulse across a chemical synapse. (11 marks)

4. (a) Differentiate,

(i) polyploidy and Aneuploidy. (06 marks)

(ii) Sex linkage and Epistasis. (04 marks)

(b) In an Onion bulb, when atleast both dominant allele R and W are present in the genotype, the colour of the onion is red. And when atleast dominant allele W is present while the other alleles being recessive in the genotype, the colour of the onion is yellow. When allele w is homozygous in the genotype, the onion is white.

(i) Give possible genotypes for the Red, yellow and white colours of the Onions. (03 marks)

(ii) A cross between onions with red and yellow colours, produced onions with Red.Yellow. white colours in the ratio of 3Red .3Yellow .2White respectively. Explain this results. Assuming no linkage. (07 marks)

5. (a) Describe the processes of locomotion without the use of muscles in organisms. (10 marks)

(b) Give an account of secondary thickening in flowering plants. (10 marks)

6. (a) What is meant by the term "Economic damage threshold" of pests. (02 mark)

(b) Describe various cultural methods to control pest population on rise. (07 marks)

(c) Explain the sequence of changes that will occur in a previously burnt piece of land from its initial stages until a climax community. (11 marks)

END