

P530/2
BIOLOGY
(Theory)
Paper 2
OCT. 2022
2½ Hours

UACE BIOLOGY – ULTIMATE
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UACE BIOLOGY
ULTIMATE

(THEORY)

Paper 2

2 Hours 30 Minutes

INSTRUCTIONS TO CANDIDATES

*This paper consists of **six** questions.*

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

*Candidates are advised to read the questions **carefully**, **organise** their answers and present them **precisely** and **logically**, illustrating with well labelled diagrams where necessary.*

SECTION A (40 MARKS)

1. Figure 1 shows the results from an investigation about the effect of different concentrations of substrate on the rate of an enzyme-catalysed reaction. The experiment was then repeated using the same experimental conditions and substrate concentrations but in the presence of fixed amounts of compounds **A** and **B** (0.2 mM).

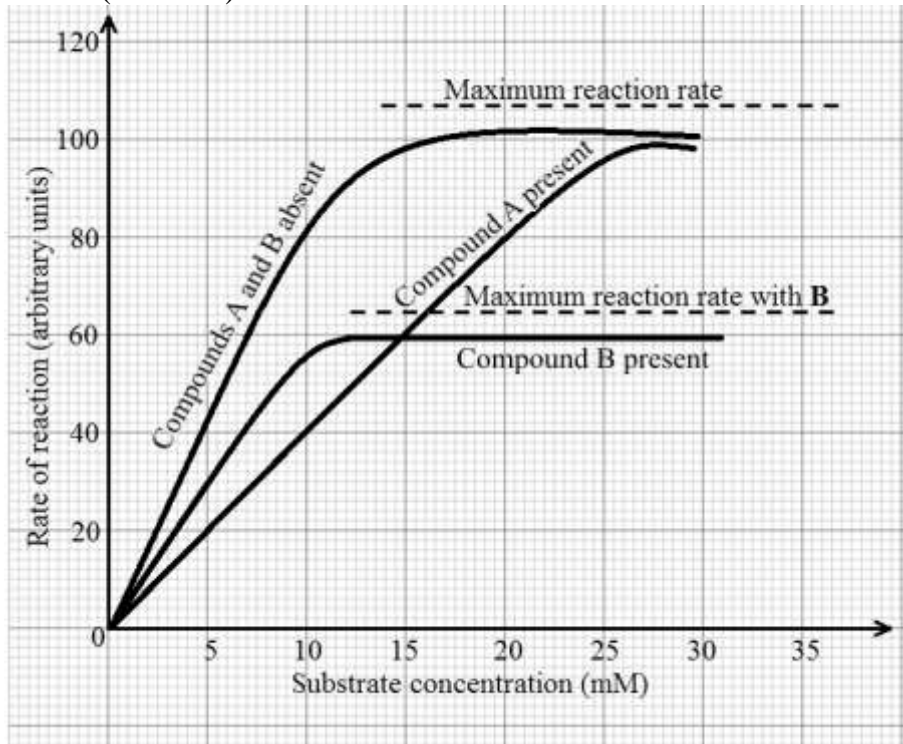


Fig. 1

- (a) Describe the rate of reaction with increasing substrate concentration:
- (i) In absence of compounds **A** and **B**. (04 marks)
 - (ii) In presence of compound **A**. (03 marks)
 - (iii) In presence of compound **B**. (03 marks)
- (b) Explain the experimental results:
- (i) In absence of compounds **A** and **B**. (06 marks)
 - (ii) In presence of compound **A**. (07 marks)
 - (iii) In presence of compound **B**. (07 marks)
- (c) Compare the rate of reaction in the presence of compounds **A** and **B**. (05 marks)
- (d) What might be the effect of using 0.4 mM of compound **A** in the investigation? (02 marks)
- (e) Suggest why compounds with similar properties to compounds **A** and **B** are often used to combat bacterial infections in the body. (03 marks)

SECTION B (60 MARKS)

- 2.** (a) Describe the different categories of roles in living organisms played by:
(i) Hydrogen bonds. *(05 marks)*
(ii) Ions. *(05 marks)*
(b) How are cell membranes involved in biological processes? *(10 marks)*
- 3.** (a) What are the essential biological cycles in organisms? *(10 marks)*
(b) How do bacteria affect ecosystems? *(10 marks)*
- 4.** (a) Describe the methods of determining body growth in higher organisms. *(10 marks)*
(b) Explain the importance to humans of controlling growth and development of organisms. *(10 marks)*
- 5.** (a) What are the benefits of biological shapes fitting together in cells and organisms? *(09 marks)*
(b) Explain how carbon dioxide affects organisms directly and indirectly. *(11 marks)*
- 6.** (a) Describe the principles of evolution as proposed by Charles Darwin. *(08 marks)*
(b) Explain how agents of microevolution change allele frequencies in a population. *(12 marks)*

END.