

EXERCISES ON GENETICS AND CHEMICAL REACTIONS FOR K.O.

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Tolentino Tuition, Year 10 Science

29 June 2026

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EXERCISE 1

- I. Which of the following is an example of a chemical reaction?
 - A. The melting of ice
 - B. The rusting of iron
 - C. The dissolving of sugar in water
 - D. The boiling of dihydrogen monoxide

2. Please observe the two following reactions,

Reaction A	Reaction B
$A + B \rightleftharpoons C$	① $A + X \rightleftharpoons A-X$ ② $(A-X) + B \rightleftharpoons C + X$
Time elapsed: 180 seconds	Time elapsed: 130 seconds

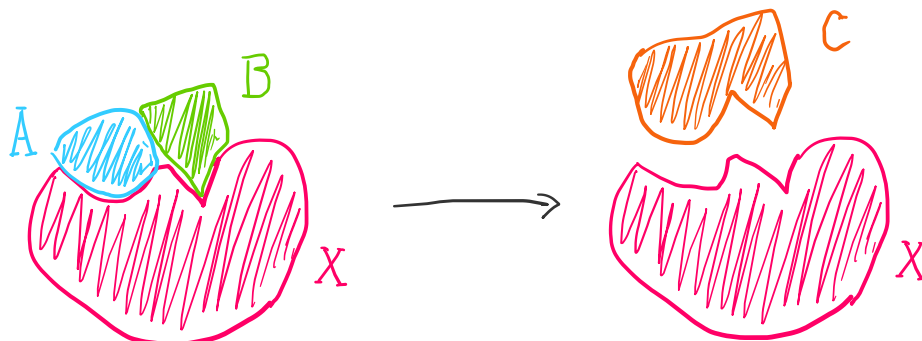
- A. State the type of substance that X is (1 mark)
- B. State the function of X in Reaction B (1 mark)
- C. **Challenge**

Reactions A and B produce the same product: C.

With reference to your answer to Part (B), can you account for the difference in time elapsed between the two reactions, as well as the 'C + X' in Reaction B – which is not present in Reaction A?

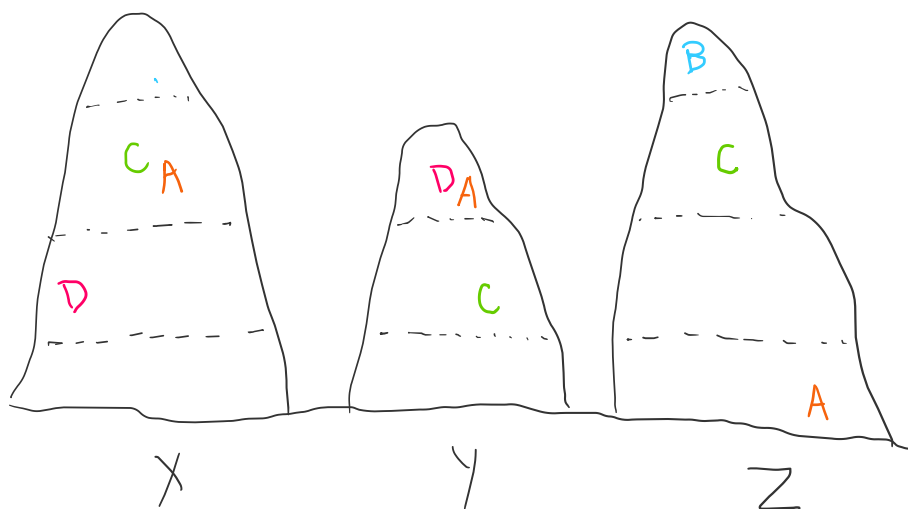
EXERCISE 2

1. In the below diagram,



- A. A chemical reaction is depicted in which X is consumed during the process
- B. C acts as a catalyst
- C. A and B react to form C more slowly as a result of their interaction with X
- D. The reaction rate between A and B is increased by X

2. Please observe the below diagram depicting where fossils were found within three separate mounds,

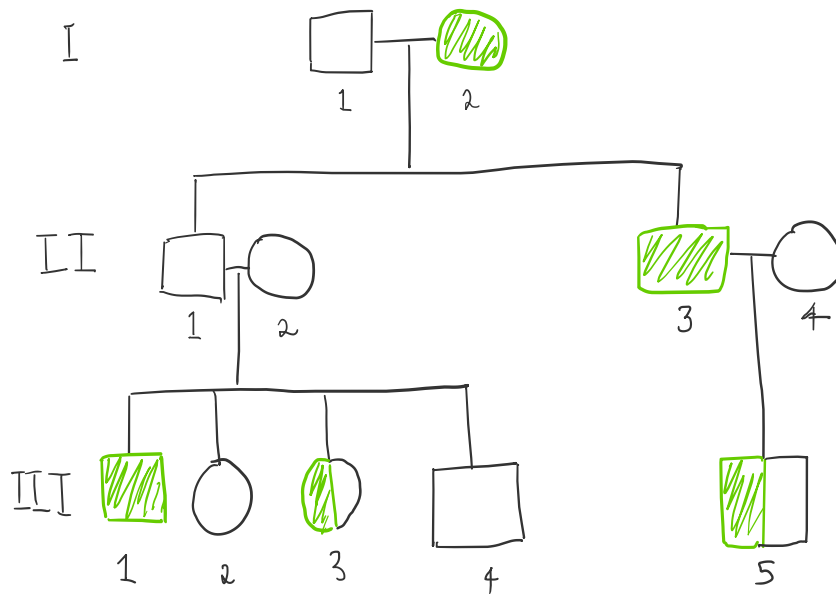


- A. Which fossil in Mound Y is likely the youngest?
- B. Which fossil across all three mounds is likely the youngest?

EXERCISE 3

In the below pedigree, shaded regions denote Tay Sachs disease, an autosomal recessive trait.

(Largely borrowed from [SiouxScience](#))



What is the probability that II – 1 and II – 2 would have a fifth child fully affected by Tay Sachs disease?