Practice Question Set For A-Level
Subject : Chemistry
Paper-2 Topic: Kinetics

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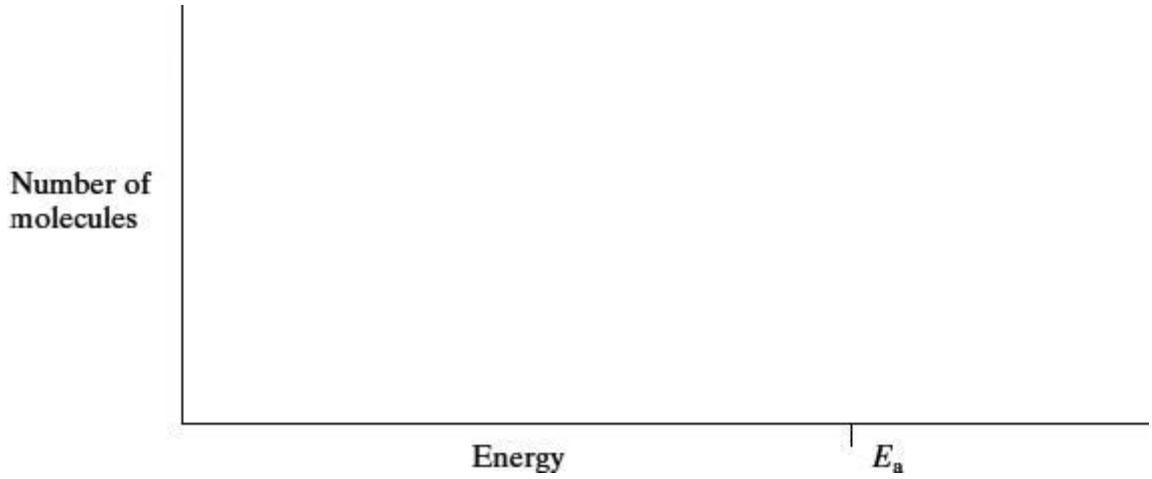
Name of the Student:_____
Max. Marks : 22 Marks **Time : 22 Minutes**

Q1.

Gas **G** decomposes as shown in the equation below.

$$G(g) \rightarrow X(g) + Y(g)$$

(a) Draw, on the axes below, a Maxwell–Boltzmann distribution curve for a sample of **G** in which only a small proportion of molecules has energy greater than the activation energy, E_a.



(3)

(b) Define the term *activation energy*.

_____

_____

(2)

(c) At any time, most of the molecules of **G** have energy less than the activation energy. Suggest why, at a constant temperature, most of **G** eventually decomposes.

_____

_____

(2)

(d) State the effect, if any, of adding a catalyst on the time required for **G** to decompose, compared with a similar sample without a catalyst. Explain in general terms how the catalyst has this effect.

Time for decomposition _____

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Explanation _____

_____

(3)

(Total 10 marks)

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Q2.

(a) Define the term *activation energy* for a reaction.

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(2)

(b) Give the meaning of the term *catalyst.*

_____

_____

(2)

(c) Explain in general terms how a catalyst works.

_____

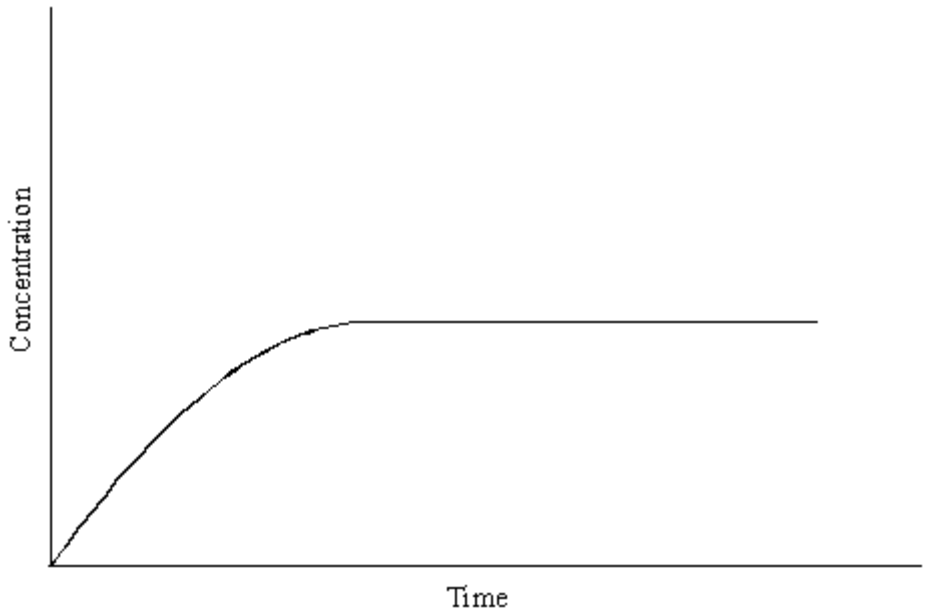
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(2)

(d) In an experiment, two moles of gas **W** reacted completely with solid **Y** to form one mole of gas **Z** as shown in the equation below.

$2W(g) + Y(s) \rightarrow Z(g)$

The graph below shows how the concentration of **Z** varied with time at constant temperature.



(i) On the axes above, sketch a curve to show how the concentration of **W** would change with time in the same experiment. Label this curve **W**.

(ii) On the axes above, sketch a curve to show how the concentration of **Z** would change with time if the reaction were to be repeated under the same conditions but in the presence of a catalyst. Label this curve **Z.**

(iii) In terms of the behaviour of particles, explain why the rate of this reaction decreases with time.

_____

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(6)
(Total 12 marks)

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