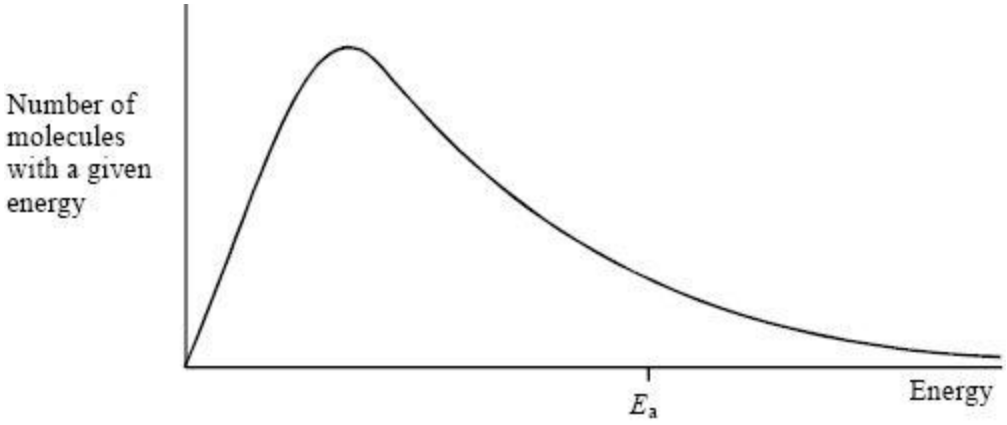
Practice Question Set For A-Level
Subject : Chemistry
Paper-2 Topic: Kinetics

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Name of the Student:_____
Max. Marks : 20 Marks **Time : 20 Minutes**

Q1.

The diagram below shows the Maxwell–Boltzmann energy distribution curve for a sample of gas at a fixed temperature. E_a is the activation energy for the decomposition of this gas.



(a) On this diagram sketch the distribution curve for the same sample of gas at a higher temperature.

(3)

(b) (i) What is the effect of an increase in temperature on the rate of a chemical reaction? Explain your answer with reference to the Maxwell–Boltzmann distribution.

Effect _____

Explanation _____

_____

_____

(ii) What is the effect of the addition of a catalyst on the rate of a chemical reaction? Explain your answer with reference to the Maxwell–Boltzmann distribution.

Effect _____

Explanation _____

_____

_____

(6)
(Total 9 marks)

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Q2.

A method of synthesising ammonia directly from nitrogen and hydrogen was developed by Fritz Haber. On an industrial scale, this synthesis requires a high temperature, a high pressure and a catalyst and is very expensive to operate.

(a) Use the data given below to calculate a value for the enthalpy of formation of ammonia

Bond	N ≡N	H – H	N – H
Mean bond enthalpy/kJ mol^{-1}	945	436	391

(3)

(b) A manager in charge of ammonia production wished to increase the daily production of ammonia and reduce the production costs. How would a chemist explain the factors that would influence the commercial efficiency of this production process?

(8)

(Total 11 marks)

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