

Name of the Student: _____

Max. Marks : 18 Marks

Time : 18 Minutes

Mark Schemes

- Q1.
- | | | | |
|-----|------|--|---|
| (a) | (i) | Z (1) | 1 |
| | (ii) | Collisions (1) | |
| | | Cause some molecules to slow down or lose energy (1) | 2 |
| (b) | | Curve starts at origin and is displaced to the right (1) | |
| | | Curve lower and does not touch energy axis (1) | 2 |
| (c) | (i) | Only a small percentage/very few collisions have $E > E_a$ (1) | 1 |
| | (ii) | Add a catalyst (1) | |
| | | Lowers E_a (1) | |
| | | More collisions/molecules have energy $> E_a$ (1) | 3 |

[9]

Q2.

- | | | |
|-----|--|---|
| (a) | minimum energy | 1 |
| | to start a reaction/ for a reaction to occur/ for a successful collision | 1 |
| (b) | activation energy is high / few molecules/particles have sufficient energy to react/few molecules/particles have the required activation energy
(or <i>breaking bonds needs much energy</i>) | 1 |
| (c) | molecules are closer together/ more particles in a given volume | 1 |
| | therefore collide more often | 1 |
| (d) | many | 1 |
| | <u>more molecules have energy greater than activation energy</u> (QoL) | 1 |
| (e) | speeds up a reaction but is chemically unchanged at the end | 1 |
| (f) | increases the surface area | 1 |

[9]