

Q1 (1 mark)

- A reaction that releases energy to the surroundings

Q2 (1 mark)

- A reaction that takes in energy from the surroundings

Q3 (1 mark)

- Particles gain energy and move more freely

Q4 (1 mark)

- Energy is released

Q5 (2 marks)

Any two:

- Combustion
- Respiration
- Neutralisation

Q6 (2 marks)

Any two:

- Photosynthesis
- Thermal decomposition
- Melting

Q7 (3 marks)

- Energy is absorbed (1)
- Particles gain energy (1)
- Particles move more freely (1)

Q8 (3 marks)

- Energy released to surroundings (1)
- Particles lose energy (1)
- Particles move closer together (1)

Q9 (3 marks)

- Exothermic reactions release energy (1)

- Endothermic reactions absorb energy (1)
- Temperature change is different (1)

Q10 (3 marks)

- Reaction released energy (1)
- Exothermic reaction (1)
- Energy transferred to surroundings (1)

Q11 (4 marks)

- Water absorbs energy (1)
- Particles gain energy (1)
- Particles move faster (1)
- Liquid changes to gas (1)

Q12 (6 marks)

Level 1 (1-2 marks)

- Basic statements about heating or cooling

Level 2 (3-4 marks)

- Some explanation using particles and energy

Level 3 (5-6 marks)

- Clear explanation of energy changes during changes of state

Expected content:

- Melting absorbs energy (1)
- Boiling absorbs energy (1)
- Freezing releases energy (1)
- Condensation releases energy (1)
- Particle movement changes (1)
- Particle spacing changes (1)

Example full-mark answer:

"When substances melt or boil, they absorb energy, so these are endothermic changes. The particles gain energy and move faster and further apart. During freezing and condensation, energy is released to the surroundings, making these exothermic changes. The particles lose energy, slow down and move closer together."

Q13 (6 marks)

Level 1 (1-2 marks)

- Basic statements about reactions or energy

Level 2 (3-4 marks)

- Some differences explained

Level 3 (5-6 marks)

- Clear explanation with examples of both reaction types

Expected content:

- Exothermic reactions release energy (1)
- Endothermic reactions absorb energy (1)
- Exothermic reactions increase temperature (1)
- Endothermic reactions decrease temperature (1)
- Example of exothermic reaction (1)
- Example of endothermic reaction (1)

Example full-mark answer:

“Exothermic reactions release energy to the surroundings and usually cause the temperature to increase. Examples include combustion and respiration. Endothermic reactions absorb energy from the surroundings and often cause the temperature to decrease. Examples include photosynthesis and thermal decomposition.”