JAWAPAN

BAB 5 Termokimia
Thermochemistry

PBD 5.1 Tindak Balas Endotermik dan Eksotermik
Endothermic and Exothermic Reactions

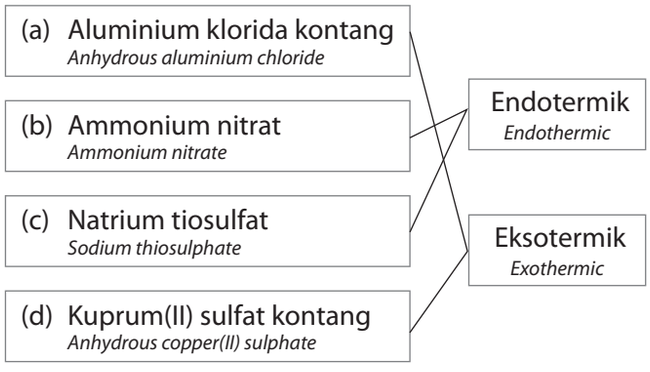
1.

Pernyataan *Statement*	Endotermik *Endothermic*	Eksotermik *Exothermic*
(a)	✓	
(b)		✓
(c)		✓
(d)	✓	
(e)		✓
(f)	✓	

2. (a) Tindak balas kimia menyebabkan berlakunya perubahan (tenaga / haba) dan menghasilkan (bahan / campuran) baharu. Tindak balas ini juga melibatkan proses pemutusan dan pembentukan (ikatan / molekul) kimia.
Chemical reactions cause changes of (energy / heat) and produce new (substance / mixture). The reaction also involves the process of break down and formation of chemical (bond / molecule).

(b) Pemutusan ikatan kimia (memerlukan / membebaskan) tenaga, manakala pembentukan ikatan kimia (memerlukan / membebaskan tenaga)
Breaking of chemical bond (require / release) energy, while formation of chemical bonds (requires / releases) energy.

3.



4. Jawapan murid
Student's answer

(a) (i) Ammonium klorida dan air
Ammonium chloride and water

(ii) Natrium hidroksida dan asid hidroklorik
Sodium hydroxide and hydrochloric acid

(b) (i) Ammonium klorida dan air
Ammonium chloride and water

(ii) Natrium hidroksida dan asid hidroklorik
Sodium hydroxide and hydrochloric acid

5. (a) (i) 100°C
(ii) 0°C

(b) (i) 20 – 25°C
(ii) 20 – 25°C

(c) Suhu air dalam bikar *A* menurun kerana membebaskan haba ke persekitaran.
The temperature of water in beaker A decreases because it releases heat to the surrounding.

Suhu air dalam bikar *B* meningkat kerana menyerap haba dari persekitaran.
The temperature in beaker B increases because it absorbs heat from the surrounding.

6.

Tindak balas *Reaction*	Serap / Bebaskan haba *Absorb / Release heat*	Endotermik / Eksotermik *Endothermic / Exothermic*
(a)	Serap haba *Absorb heat*	Endotermik *Endothermic*
(b)	Bebaskan haba *Release heat*	Eksotermik *Exothermic*
(c)	Serap haba *Absorb heat*	Endotermik *Endothermic*
(d)	Bebaskan haba *Release heat*	Eksotermik *Exothermic*
(e)	Bebaskan haba *Release heat*	Eksotermik *Exothermic*
(f)	Serap haba *Absorb heat*	Endotermik *Endothermic*

7. Pek panas mengandungi air dan bahan kimia kering seperti kalsium klorida kontang, magnesium sulfat kontang dan kuprum(II) sulfat kontang yang terletak pada ruang yang berasingan. Apabila pek ini ditekan, membran nipis antara kedua-dua ruang itu pecah. Bahan kimia tersebut melarut dalam air dan membebaskan haba. Haba yang dibebaskan berupaya memanaskan anggota badan yang sakit. Pek ini berfungsi dengan menggunakan konsep tidak balas eksotermik.
The hot pack contains water and dry chemicals such as anhydrous calcium chloride, anhydrous magnesium sulphate and anhydrous copper(II) sulphate that are separated in different space. When this pack is pressed, the thin membrane between the two spaces will be broken. The chemicals dissolve in water and heat is released. The released heat could relieved body pain. This pack functions based on exothermic reaction concept.

8. Jawapan murid
Student's answer

Power PT3

Bahagian A

1. B **2.** D **3.** A **4.** D **5.** A
6. C

Bahagian B

1. (a) (iii), (iv)
(b) (i) Membebaskan haba
Releases heat
(ii) Berkurang
Decreases

2. (a) (i) Haba dibebaskan
Heat is released.
(ii) Haba diserap
Heat is absorbed
(b) (i) BENAR / *TRUE*
(ii) PALSU / *FALSE*

Bahagian C

3. (a) Endotermik – Haba diserap
Eksotermik – Haba dibebaskan
Endothermic – Heat is absorbed
Exothermic – Heat is released
(b) Endotermik; Haba diserap oleh doh kek
Endothermic; Heat is absorbed by the cake dough
(c) Berlaku tindak balas eksotermik
Membebaskan haba ke persekitaran.
Suhu persekitaran meningkat
Exothermic reaction occurs
Release heat to surrounding
Surrounding temperature increases
(d) Glukosa dioksidakan (oleh oksigen).
Membentuk karbon dioksida / air / ATP
Tenaga haba dibebaskan ke persekitaran.
Glucose is oxidised (by oxygen)
Form carbon dioxide / water / ATP
Heat energy is released to surrounding

Power KBAT

1. Garam ammonium dan garam nitrat. Garam ammonium dan garam nitrat melarut dalam air dan menyerap haba.
Ammonium salt and nitrate salt. Ammonium salt and nitrate salt dissolve in water and absorb heat.

2. Ketika demam, suhu badan Fatimah meningkat dari suhu normal badan (37°C). Untuk menurunkan suhu badannya, haba daripada badan Fatimah perlu dibebaskan ke persekitaran sama seperti tindak balas eksotermik. Ibunya boleh menggunakan tuala basah untuk diletakkan di dahi supaya dapat menurunkan suhu badan Fatimah.
When in fever, body temperature increases from normal body temperature (37°C). To lower the body temperature, heat from Fatimah's body should be released to the surrounding as in exothermic reaction. Her mother could use a wet towel placed on forehead to lower Fatimah's body temperature.