1. When you sitting down on a cold metal bench, the bench feels cold because...
Ketika anda duduk di bangku logam yang sejuk, bangku itu berasa sejuk kerana...

- ◯ **A** no heat is transferred, so it feels cold.
  tiada haba dipindahkan, jadi ia berasa sejuk.
- ◯ **B** heat transfers from the ground to the bench.
  haba dipindahkan dari tanah ke bangku tersebut.
- ◯ **C** heat is absorbed by the bench from your body, leaving you feeling it as cold.
  haba diserap oleh bangku dari badan anda, menyebabkan anda berasa sejuk.
- ◯ **D** heat is released by the bench to your body, leaving you feeling it as cold.
  haba dibebaskan oleh bangku ke badan anda, menyebabkan anda berasa sejuk.

2. Compound P is dissolved in water in a test tube. It is found that the wall of the test tube becomes cold. Which of the following is most probably compound P?
Sebatian P dilarutkan dalam air di dalam sebuah tabung uji. Didapati dinding tabung uji menjadi sejuk. Antara yang berikut, yang manakah mungkin sebatian P?

- ◯ **A** Sulphuric acid
  Asid sulfurik
- ◯ **B** Calcium oxide
  Kalsium oksida
- ◯ **C** Sodium hydroxide
  Natrium hidroksida
- ◯ **D** Ammonium chloride
  Ammonium klorida

3. Which reactions are exothermic?
Tindak balas manakah adalah eksotermik?

I Rusting
Pengaratan

II Neutralisation
Peneutralan

III Cake baking
Membuat kek

IV Photosynthesis
Fotosintesis

- ◯ **A** I and II
  I *dan* II
- ◯ **B** I and III
  I *dan* III
- ◯ **C** II and IV
  II *dan* IV
- ◯ **D** III and IV
  III *dan* IV

4. Which statement is correct about endothermic reaction?
Pernyataan manakah yang benar mengenai tindak balas endotermik?

- ◯ **A** The heat released during bond formation is more than the heat absorbed during bond breaking.
  Haba yang dibebaskan semasa pembentukan ikatan adalah lebih daripada haba yang diserap semasa pemecahan ikatan.
- ◯ **B** The heat released during bond formation is less than the heat absorbed during bond breaking.
  Haba yang dibebaskan semasa pembentukan ikatan adalah kurang daripada haba yang diserap semasa pemecahan ikatan.
- ◯ **C** The heat released during bond formation is equal to the heat absorbed during bond breaking.
  Haba yang dibebaskan semasa pembentukan ikatan adalah sama dengan haba yang diserap semasa pemecahan ikatan.
- ◯ **D** No heat is absorbed or released during bond breaking and bond formation.
  Tiada haba diserap atau dibebaskan semasa pemecahan ikatan dan pembentukan ikatan.

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5. Which of the following is **not** the example of endothermic reactions?
Antara yang berikut, yang manakah **bukan** *contoh tindak balas endotermik?*

- A Photosynthesis
  Fotosintesis
- B Melting of ice cubes
  Peleburan ais
- C Baking cake
  Membuat kek
- D Respiration
  Respirasi

6. Which of the following is a chemical change?
Antara yang berikut, yang manakah merupakan perubahan kimia?

- A Melting of ice
  Peleburan ais
- B Slow heating of wax
  Pemanasan lilin secara perlahan
- C Dissolving sugar in water
  Pelarutan gula dalam air
- D Reaction between an acid and an alkali
  Tindak balas antara asid dengan alkali

7. Amzar mixed water and calcium chloride in a beaker. The reaction made the water turns cloudy. The temperature of the reaction changes from 24°C to 53°C. What is the reaction?
Amzar mencampurkan air dengan kalsium klorida dalam sebuah bikar. Tindak balas itu membuatkan air menjadi keruh. Suhu tindak balas berubah dari 24°C ke 53°C. Apakah tindak balas tersebut?

- A Endothermic reaction
  Tindak balas endotermik
- B Exothermic reaction
  Tindak balas eksotermik
- C Rusting reaction
  Tindak balas pengaratan
- D Physical reaction
  Tindak balas fizikal

8. Which of the following is **not** an example of an endothermic reaction?
Antara yang berikut, yang manakah **bukan** *contoh tindak balas endotermik?*

- A Evaporation of water
  Penyejatan air
- B Melting of ice
  Peleburan ais
- C Cooking an eggs
  Memasak telur
- D Neutralisation of an acid with an alkali
  Peneutralan asid dengan alkali

9. Combustion reactions of fuels is an example of...
Tindak balas pembakaran minyak adalah contoh bagi...

- A chain reaction.
  tindak balas berantai.
- B endothermic reaction.
  tindak balas endotermik.
- C exothermic reaction.
  tindak balas eksotermik.
- D exothermic and endothermic reactions.
  tindak balas eksotermik dan endotermik.

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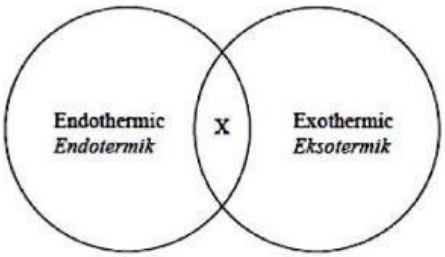
10. A reaction that absorbs heat from the surroundings is a reaction of...
Tindak balas yang menyerap haba dari sekeliling disebut tindak balas...

- A exothermic.
  eksotermik.
- B endothermic.
  endotermik.
- C hydration.
  penghidratan.
- D combustion.
  pembakaran.

11. What happens during a chemical reaction?
Apakah yang berlaku semasa suatu tindak balas kimia?

- A Formation and breaking of chemical bonds
  Pembentukan dan penguraian ikatan kimia
- B Change in shape
  Perubahan bentuk
- C Crystallisation
  Penghabluran
- D Dissolution
  Pelarutan

12. The diagram below shows the characteristics of endothermic and exothermic reactions.
Rajah di bawah menunjukkan ciri-ciri bagi tindak balas endotermik dan eksotermik.



What is represented by X?
Apakah yang diwakili oleh X?

- A Heat is released
  Haba dibebaskan
- B Heat is absorbed
  Haba diserap
- C Involves physical change
  Melibatkan perubahan fizikal
- D Involves temperature change
  Melibatkan perubahan suhu

13. What is the possible temperature of the solution formed when ammonium chloride powder is dissolved in water at room temperature?
Berapakah kemungkinan suhu larutan yang terbentuk apabila serbuk ammonium klorida dilarutkan dalam air pada suhu bilik?

- A 0°C
- B 20°C
- C 30°C
- D 40°C

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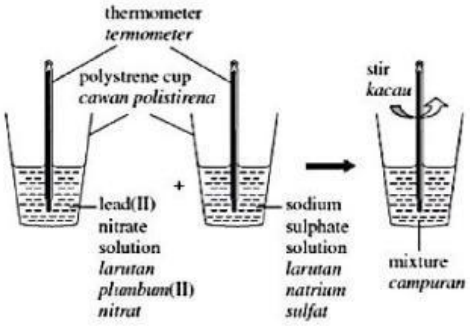
14. The diagram below shows the apparatus set up in a thermochemistry experiment.
Rajah di bawah menunjukkan susunan radas bagi satu eksperimen termokimia.



Which of the following will be observed in the experiment?
Antara yang berikut, yang manakah akan diperhatikan dalam eksperimen ini?

I The thermometer reading increases.
Bacaan termometer meningkat.

II The thermometer reading decreases.
Bacaan termometer menurun.

III The polystyrene cup becomes warm.
Cawan polistirena menjadi panas.

IV Gas bubbles are produced.
Gelembung gas dihasilkan.

- ◯ **A** I and II
  I *dan* II
- ◯ **B** I and III
  I *dan* III
- ◯ **C** II and IV
  II *dan* IV
- ◯ **D** III and IV
  III *dan* IV

15. Which of the following statements is correct?
Antara pernyataan berikut, yang manakah betul?

- ◯ **A** Photosynthesis is an exothermic reaction.
  Fotosintesis merupakan satu tindak balas eksotermik.
- ◯ **B** An atomic bomb explosion is an example of an endothermic reaction.
  Letupan bom atom ialah contoh tindak balas endotermik.
- ◯ **C** An exothermic reaction is a reaction that absorbs heat from surroundings.
  Tindak balas eksotermik ialah tindak balas yang menyerap haba dari sekeliling.
- ◯ **D** When solid ammonium nitrate is dissolved in water, the container that holds it becomes cold.
  Apabila pepejal ammonium nitrat dilarutkan dalam air, bekas yang mengisinya menjadi sejuk.

16. Which of the following is an example of an exothermic reaction?
Antara yang berikut, yang manakah contoh bagi tindak balas eksotermik?

- ◯ **A** Photosynthesis
  Fotosintesis
- ◯ **B** Sublimation of solid iodine to iodine gas
  Pemejalwapan pepejal iodin kepada gas iodin
- ◯ **C** Heating of anhydrous copper(II) sulphate
  Pemanasan garam kuprum(II) sulfat terhidrat
- ◯ **D** Adding of zinc powder to hydrochloric acid
  Serbuk zink ditambahkan kepada asid hidroklorik

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17. Which of the solutions will release heat to the surrounding when they are mixed?
Larutan yang manakah akan membebaskan haba ke sekeliling apabila dicampurkan?

- A Water and vinegar
  Air dan cuka
- B Water and ammonium chloride
  Air dan ammonium klorida
- C Water and sodium chloride
  Air dan natrium klorida
- D Water and concentrated sulphuric acid
  Air dan asid sulfurik pekat

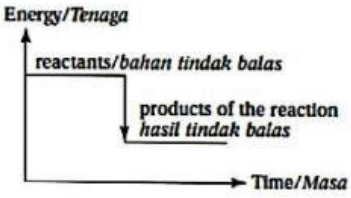
18. Melvin dissolves a spoonful of sodium hydroxide at the temperature of 24°C. Predict the final temperature of the solution after all the sodium hydroxide powder has dissolved.
Melvin melarutkan satu sudu serbuk natrium hidroksida ke dalam air suling pada suhu 24°C. Ramalkan suhu akhir larutan apabila kesemua serbuk natrium hidroksida itu terlarut.

- A 16°C
- B 20°C
- C 24°C
- D 30°C

19. Which of the following is an endothermic reaction?
Antara yang berikut, yang manakah adalah tindak balas endotermik?

- A Neutralisation reaction
  Tindak balas peneutralan
- B Thermite reaction
  Tindak balas termit
- C Reaction between metals and acids
  Tindak balas antara logam dengan asid
- D Decomposition reaction of metal carbonate
  Tindak balas penguraian karbonat logam

20. The diagram below shows energy changes of a chemical reaction.
Rajah di bawah menunjukkan perubahan tenaga bagi tindak balas kimia.



Which of the following shows the same energy changes?
Antara yang berikut, yang manakah menunjukkan perubahan tenaga yang sama?

- A Copper carbonate $\xrightarrow{\text{heat}}$ copper oxide + carbon dioxide
  Kuprum karbonat $\xrightarrow{\text{haba}}$ kuprum oksida + karbon dioksida
- B Ammonium chloride + water → ammonium chloride solution
  Ammonium klorida + air → larutan ammonium klorida
- C Water $\xrightarrow{\text{heat}}$ water vapour
  Air $\xrightarrow{\text{haba}}$ wap air
- D Ethanol + oxygen → carbon dioxide + water
  Etanol + oksigen → karbon dioksida + air

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