

الإدارة المركزية للتعليم العام

مستشار مادة العلوم



Weekly Home Work

Week (4)

Integrated Science

Secondary one

Second Term 2026

مراجعة

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إشراف عام

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رئيس الإدارة المركزية للتعليم العام

والمشرف على مستشاري

المواد الدراسية

إعداد

أ/ عمرو مالي خبير بمكتب مستشار العلوم

أ/ عبد المسيح حزين موجه عام الأقصر

إشراف

د/ عزيزة رجب خليفة

مستشار مادة العلوم

Lesson Two: Biological Processes in Living Organisms and the Stability of the Biosphere (part two)

Choose the correct answer

1- The number of moles in 180 g of acetic acid (CH_3COOH) = ...

(C = 12 , H = 1 , O = 16)

A- 1 mol

B- 2 mol

C- 3 mol

D- 4 mol

2- Which process is considered an exothermic system:

A- freezing

b- evaporation

c- melting

d- heating water

3- In an exothermic reaction

- a- The energy stored in the products is less than the energy stored in the reactants.
- b- The energy stored in the reactants is less than the energy stored in the products.
- c- The surrounding medium lose heat
- d- The system gains heat.

4- Which of the following biological processes represents an example of an endothermic (energy-absorbing) reaction?

- a- Cellular respiration
- b- Formation of water molecules
- c- Decomposition of potassium chloride
- d- Photosynthesis

5- The activation energy of a reaction is at its maximum when...

- a- The energy of the products is less than the energy of the reactants
- b- The energy of the reactants is greater than the energy of the products
- c- The energy of the reactants is less than the energy of the products
- d- It has no relation to the energy of the reactants and products

6- In the cellular respiration experiment using seeds, it was observed that the limewater in flask (A) (at room temperature) turned cloudy faster than in flask (B) (in the refrigerator). How can this difference be analyzed?

- A. The rate of oxygen production is higher in flask (A).
- B. The rate of carbon dioxide consumption is higher in flask (B).
- C. The rate of cellular respiration (CO₂ production) is higher in flask (A)
- D. The seeds in flask (B) died due to extreme cold

7-Which of the following equations represents an exothermic reaction ?

- a- $XY_5 \rightarrow XY_3 + Y_2$, $\Delta H = +420 \text{ KJ}$
- b- $XY_5 \rightarrow XY_3 + Y_2 + 420 \text{ KJ}$
- c- $XY_5 \rightarrow XY_3 + Y_2 - 420 \text{ KJ}$
- d- $XY_5 + 420 \text{ KJ} \rightarrow XY_3 + Y_2$

8-In the reaction: $2\text{H}_2\text{O}_2(\text{l}) \rightarrow 2\text{H}_2\text{O}(\text{l}) + \text{O}_2(\text{g})$, $\Delta H = -196 \text{ kJ/mol}$, what is the change in heat of the decomposition of 0.34 g of hydrogen peroxide H_2O_2

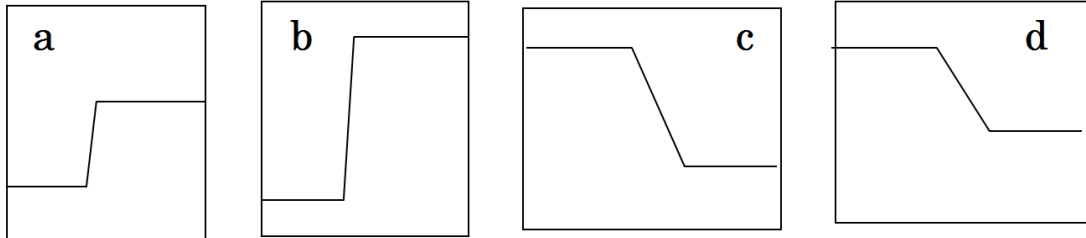
(H = 1 , O = 16)

- a- - 0.98 kJ
- b- - 1.96 kJ
- c- - 196 kJ
- d- - 98 KJ

9-If the enthalpy of the reactants is 2584 kJ and that of the products is 5642 kJ, then this reaction is

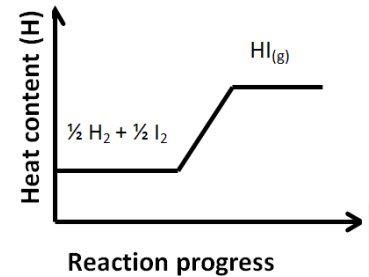
- a- Exothermic, with ΔH negative
- b- Endothermic, with ΔH negative
- c- Exothermic, with ΔH positive
- d-Endothermic, with ΔH positive

10-Which graph represented a reaction produces largest amount of energy (heat) to the surrounding medium?



11-Which of the following best describe the heat change of this reaction?

- a) Sum of heat content of products (H_p) is greater than of sum of heat content of reactants (H_R) and sign of ΔH is positive
- b) Sum of heat content of products (H_p) is less than of sum of heat content of reactants (H_R) and sign of ΔH is positive
- c) Sum of heat content of products (H_p) is less than of sum of heat content of reactants (H_R) and sign of ΔH is negative
- d) Sum of heat content of products (H_p) is greater than of sum of heat content of reactants (H_R) and sign of ΔH is negative



12-From the following equation: $H_2O(l) \rightleftharpoons H_2O(g)$, $\Delta H = +44 \text{ KJ/mol}$

- a) heat content of water vapour $>$ heat content of liquid water
- b) heat content of water vapour = half heat content of liquid water
- c) heat content of water vapour $<$ heat content of liquid water
- d) heat content of water vapour = heat content of liquid water

13-If ΔH for the reaction = + 200 kJ, then...

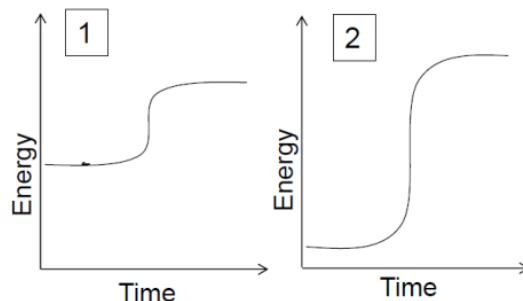
- a) The system releases heat
- b) The surrounding medium gain heat
- c) The system gains heat
- d) ΔH is negative

Essay

1-Study the opposite figure then answers

A-Which reaction (1 or 2) absorbs more energy to occur?

.....



2- From the following reaction:



- If an amount of energy equal to 4359 kJ is released, calculate the mass of methanol burned?
(c = 12 , H = 1 , O = 16)

.....
.....

3- Indicate whether reaction is endothermic or exothermic?

	The Chemical reaction	The type	Sign of ΔH (-ve) or (+ve)
a	The heat content of products less than that of reactants		
b	The reaction produces heat when it occurs		
c	$\text{NH}_4\text{NO}_3(\text{s}) + \text{H}_2\text{O} + 100 \text{ kJ} \rightarrow \text{NH}_4^+(\text{aq}) + \text{NO}_3^-(\text{aq})$		
d	$\text{NaOH}(\text{s}) + \text{H}_2\text{O} \rightarrow \text{Na}^+(\text{aq}) + \text{OH}^-(\text{aq})$ (Temperature of water increases.)		
e	$2\text{C}_2\text{H}_2(\text{g}) + 5 \text{O}_2(\text{g}) - 7000 \text{ KJ} \rightarrow 4\text{CO}_2(\text{g}) + 2\text{H}_2\text{O}(\text{v})$		

4-From the following equation:



What is the change value in heat content of combustion of 0.972 g of Sulphur [S = 32]



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Lesson Two: Biological Processes in Living Organisms and the Stability of the Biosphere (part two)

Model (A)

Choose the correct answer:

1-From the equation: $2C_{(s)} + 2H_{2(g)} + 52.3 \text{ kJ} \rightarrow C_2H_{4(g)}$, It can be concluded that.....

- a- the medium acquires heat.
- b- heat transfers from the surrounding medium to the system.
- c- the system loses heat.
- d- heat transfers from the system to the surrounding medium

2- Why must a chemical equation be balanced when calculating enthalpy change?

- a- To achieve the law of conservation of energy.
- b- To achieve the law of conservation of mass
- c- To keep the temperature constant
- d- To determine the type of reaction (endothermic/exothermic).

3-Equal amounts of four different substances (A, B, C & D) where added separately to equal amounts of an acid and a thermometer placed in each mixture. For which mixture is the reaction the most exothermic?

- A. mixture (A) temperature rises by 3 C°
- B. mixture (B) temperature rises by 5 C°
- C. mixture (C) temperature falls by 3 C°
- D. mixture (D) temperature falls by 5 C°

4- Which of this process is always endothermic?

- a- freezing
- b- condensation
- c- burning
- d- melting

Essay Question

If you know the following reaction take place under hard condition



Calculate the amount of heat lost from 252 g of water to freeze.

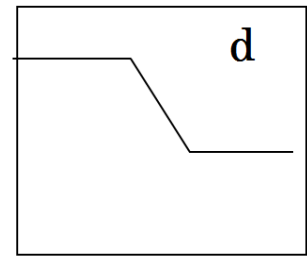
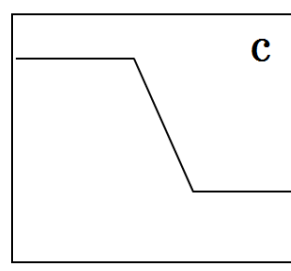
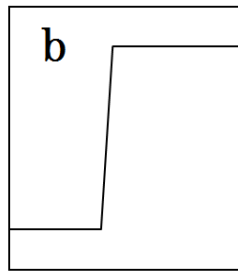
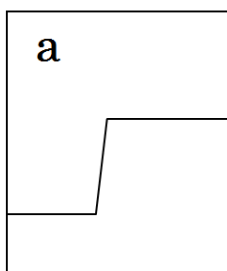
Model (B)

Choose the correct answer

1- In exothermic system ,

- A- Heat transfers from the surrounding medium to system
- B- Heat transfers from the system to the surrounding medium
- C- Heat doesn't transfer between the system and surrounding medium
- D- The temperature of system is rising.

2- Which one from following graphs represented a reaction absorbed largest amount of energy (heat) from the surrounding medium



3- using the chemical equation: $\text{H}_2\text{O}_{(v)} \rightarrow \text{H}_2\text{O}_{(l)}$, $\Delta H = - 44 \text{ K.J}$

Then heat change (ΔH) for condensation 2 mole of water =.....K.J

- a) -88 K.J b) +88 K.J c) -44 K.J d) + 44 K.J

4- From the combustion equation of the hydrocarbon



If 84 grams of the hydrocarbon are completely burned, then

- a) The surrounding medium gains 955 KJ of energy
b) The surrounding medium loses 2865 KJ of energy
c) The reactants lost 2865 KJ of energy
d) The surrounding medium gains 1910 KJ of energy

Essay Question

5- Compare between exothermic reactions –endothermic reaction in term of

1- Sign of ΔH

2- H_R , H_P

Model (C)

Choose the correct answer

1- Heat content of water is the sum amount of stored energy in(H = 1 , O = 16)

- A- 1 L
- B- 18 g
- C- 22.4 L
- D- 1 Kg

2- By using the following equation of burning of octane :



Then the change in (ΔH) enthalpy when 4 moles are resulted from CO_2 equal ...

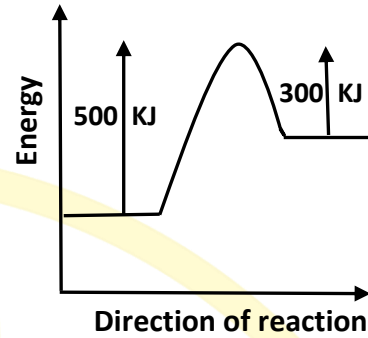
- A- -5450 KJ
- B- +5450 KJ
- C- +2725 KJ
- D- -2725 KJ

3- If the heat enthalpy of reactant (H_R) is 1250 KJ and enthalpy of product (H_P) 1720 KJ then

- A- The reaction is endothermic , $\Delta H = +470$ KJ
- B- The reaction is exothermic , $\Delta H = -470$ KJ
- C- The reaction is exothermic, $\Delta H = +470$ KJ
- D- The reaction is endothermic, $\Delta H = -470$ KJ

4-From the opposite diagram of energy , the value of $\Delta H = \dots$

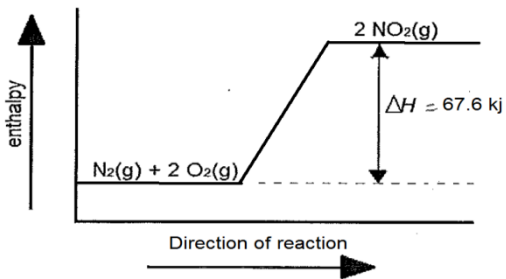
- A) + 200 KJ
- B) - 200 KJ
- C) + 300 KJ
- D) - 300 kJ



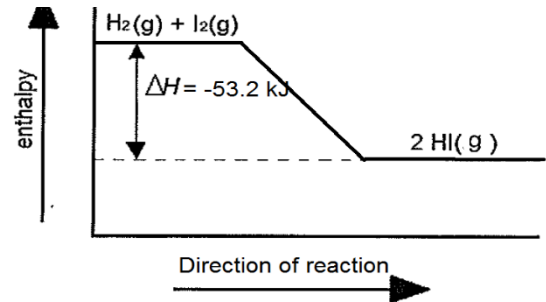
Essay Question

5- Study the following figures then answer

(A)



(B)



- a- Which reaction required energy to occur? (.....)
- b- Which reaction will increase the temperature of the surrounding medium? (.....)