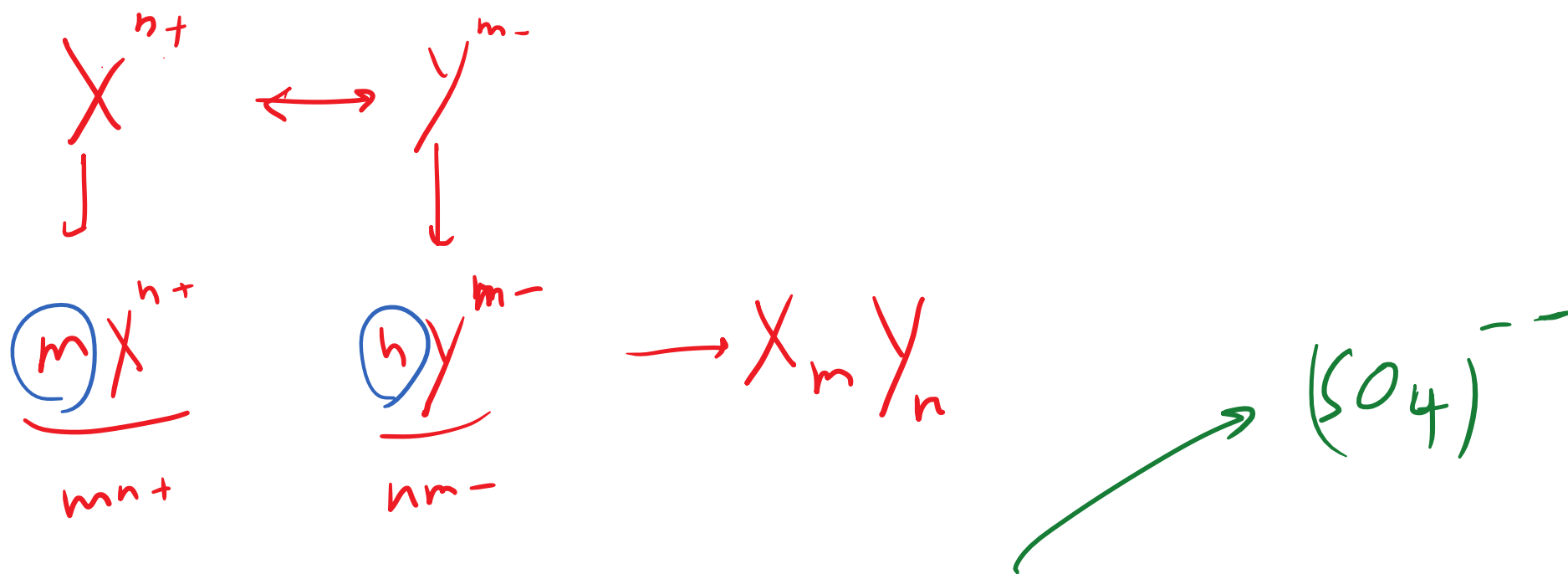


گالوانیزہ کرنا : یوٹانن سطح پر جسم (معمولاً فٹلے) باروس
هدف : ضد زنگ کرنا

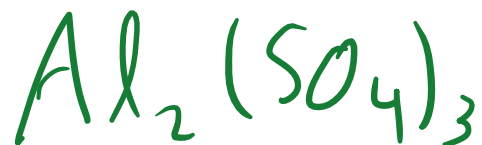
The aim of galvanization (coating with zinc) of an object made of iron is

- ☐ A. increasing its mechanical resistance
- ☐ B. giving it a better look
- ☐ C. increasing its electrical resistance
- ☒ D. safeguarding it from corrosion
- ☐ E. increasing its weight

فوری
برائے کوروشن (زنگزدن)



A salt is formed by the ions Al^{+++} and SO_4^{--} . Its chemical formula is



- ✓ ☒ A. $Al_2(SO_4)_3$
- ☐ B. $Al(SO_4)_3$
- ☐ C. $Al_3(SO_4)_2$
- ☐ D. Al_3SO_8
- ☐ E. Al_2SO_4

Which one of the following transformations generates more heat for the same amount of converted substance?

- ☐ A. Neutralization of an acid with a base
- ☐ B. Freezing of liquid water into ice
- ☐ C. Condensation of vapour into liquid water
- ☒ D. Combustion of methane with oxygen
- ☐ E. Combustion of methanol with oxygen

از یک الکترون از یک عدد کوانتوم کمتر به یک عدد کوانتوم بالاتر بخواهیم ببریم یا به انرژی مصرف کنیم (الکترون برآوردن

از یک عدد کوانتوم کمتر به یک عدد کوانتوم بالاتر انرژی میگیرد)

در آن الکترون از یک عدد کوانتوم بالاتر به یک عدد کوانتوم پایینتر برود، انرژی آزاد میکند.

Consider the five following electronic transitions in an atom of hydrogen, where n_i represents the initial principal quantum number, and n_f represents the final principal quantum number.

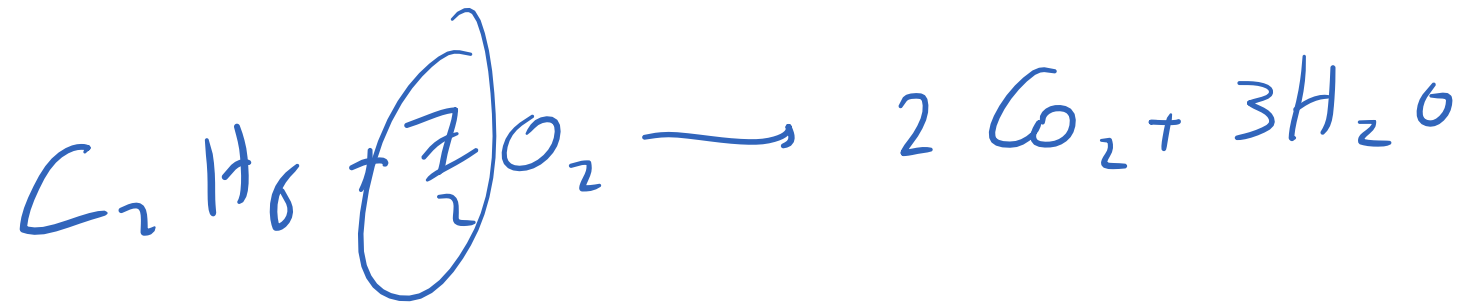
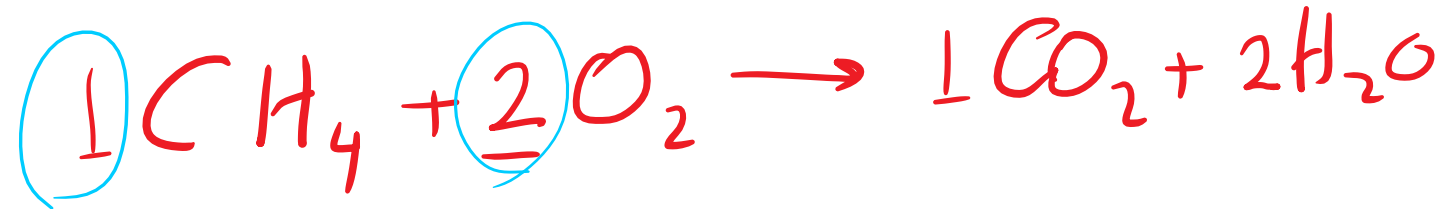
	I	II	III	IV	V
n_i	3	5	4	7	2
n_f	5	3	7	8	7

In which transition does the atom lose energy?

- ☒ A. II
- ☐ B. III
- ☐ C. IV
- ☐ D. I
- ☐ E. V

Methane, CH_4 , burns with oxygen producing CO_2 and H_2O . How many cubic meters of oxygen are needed to burn 1 m^3 of methane?

- ☐ A. $1,5 \text{ m}^3$
- ☐ B. $1,0 \text{ m}^3$
- ☐ C. $3,0 \text{ m}^3$
- ☐ D. $0,5 \text{ m}^3$
- ☒ E. $2,0 \text{ m}^3$



An endothermic chemical reaction

سوال

- ☐ A. yields heat to the surroundings
- ☒ B. absorbs heat from the surroundings
- ☐ C. leads to an increase of the total number of moles
- ☐ D. cannot take place
- ☐ E. always takes place in a close container

The electron configuration of an atom of phosphorus is $1s^2 2s^2 2p^6 3s^2 3p^3$.
How many electrons does it contain?

- ☐ A. 30
- ☒ B. 15
- ☐ C. 5
- ☐ D. 11
- ☐ E. 14

Which of the following properties of water (H_2O) is affected by gravity?

- ☐ A. Vapour pressure
- ☐ B. Melting temperature
- ☐ C. Boiling temperature
- ☐ D. Density
- ☒ E. Specific weight

→ $\rho = \frac{m}{V}$

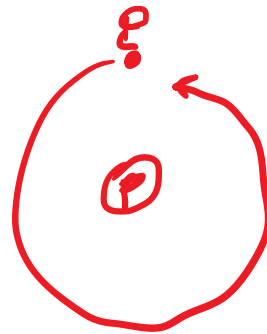
→ ρg

→ γ (Specific weight)

The ion H^- has the same electronic configuration as an atom of

- ☒ A. He
- ☐ B. Xe
- ☐ C. Ar
- ☐ D. Ne
- ☐ E. Kr

He :



Which one of the following chemical elements is an alkali metal?

فلزات قلیلی

عنصر سدیم اہل جہل سنوں بہ جز ہیروئن

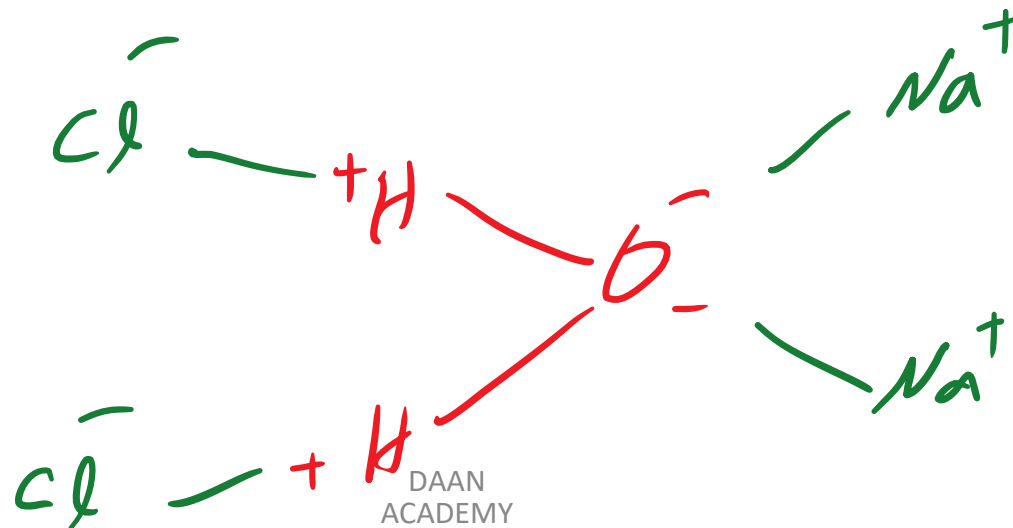
فلزات سہولت

- ☐ A. Silver
- ☐ B. Aluminium
- ☐ C. Fluorine
- ☐ D. Uranium
- ☒ E. Sodium



The salt typically used for cooking - NaCl - dissolves easily in water because

- ☐ A. the atoms Na and Cl are produced in water
- ☒ B. the ions Na^+ and Cl^- are strongly attracted by the molecules of water
- ☐ C. it reacts with water to produce HCl and NaOH, which are soluble
- ☐ D. the molecules of water have a greater kinetic energy than salt
- ☐ E. it melts into a liquid



To induce the chemical change $\text{O}_2 \rightarrow 2\text{O}$ we must

- ☐ A. subtract energy
- ☒ B. supply energy
- ☐ C. lower the temperature
- ☐ D. decrease the volume
- ☐ E. increase pressure

1g of NaCl dissolves into one litre of distilled and degassed water. The pH of the solution is

- ☐ A. negative
- ☐ B. greater than the pH of water
- ☐ C. greater or less than the pH of water, depending on the temperature
- ☐ D. less than the pH of water
- ☒ E. basically equal to the pH of water

Which one of the following elements is a solid at room pressure and temperature?

- ☐ A. Neon
- ☒ B. Magnesium
- ☐ C. Bromine
- ☐ D. Hydrogen
- ☐ E. Mercury