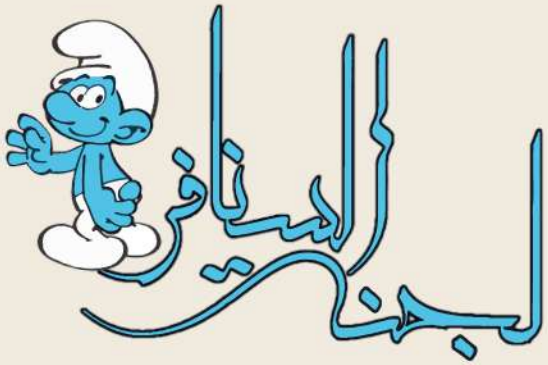
خدمتكم طريق خضناه لرضى الله

2021

أسئلة سنوات فاينال

كيمياء عامة



بسم الله الرحمن الرحيم

نقدم لكم نحن أسرة فريق

(لجنة السنافر)

مجموعة أسئلة اختبارات إلكترونية تم تجميعها خلال الفصول الماضية
سائلين المولى أن يوفقنا وإياكم لكل خير

تنويه

يوجد بعض الأسئلة عليها إجابات قد تحتمل الصواب وقد تحتمل الخطأ

فإن أصبنا فما هو إلا توفيق من الله

وإن أخطأنا فمن أنفسنا

#خدمتكم_طريق_خضناه_لرضى_الله

#الإتجاه_الاسلامي

#بسواعدنا_نبنيها

#لجنة_السنافر

#هي_لله

When the following equation is balanced with the smallest possible set of integers (in the acidic medium)

$$Mn^{2+}(aq) + Fe^{3+}(aq) \Longrightarrow Fe^{2+}(aq) + MnO_4^-(aq)$$

The coefficient of Fe^{3+} in the balanced equation is :

Select one:

- 5
- 2
- 8
- 1
- 4

A representative element in period 3 has only three electrons in its valence shell (outer shell) what is the atomic number of this element

Select one:

- 13
- 19
- 20
- 12
- 20

Calculate ΔG° rxn :

$$6H_2O\ (l) + 6\ CO_2(g) \rightarrow 2C_3H_6O\ (l) + 8O_2\ (g)$$

given that:

$\Delta G_f^\circ\ CO_2(g) = -394.6$ kJ/mol,

$\Delta G_f^\circ\ H_2O(l) = -237.2$ kJ/mol and

$\Delta G^\circ f\ C_3H_6O\ (l) = -154.5$ kJ/mol,

Select one:

- +1740.9 kJ
- -3697.8 KJ
- -3481.8 KJ
- + 3481.8 kJ
- -1740.9 kJ

When the following equation is balanced with the smallest possible set of integers (in the acidic medium)

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The coefficient of Fe^{3+} in the balanced equation is :

Select one:

- 8
- 1
- 4
- 5
- 2

What is the molar concentration of a solution of 9.88 g $MgSO_4$ dissolved in 75 mL water ?

(Molar mass of $MgSO_4$ = 120 g/mol)

a. 0.011 M

b. 11 M

c. 1.1 M

d. 0.11 M

Select one:

- 0.11M
- 0.011 M
- 11 M
- 1.1 M

The quantity of heat that is needed to raise the temperature of a 1.00 gram sample of a substance 1.00 degree is called:

Select one:

- Enthalpy
- Kinetic energy
- Heat capacity
- Specific heat

The boiling point of a substance X = 350 K

If enthalpy of vaporization (ΔH vap) = 55kJ/mol

Find the entropy of vaporization (ΔS vap) in J/mol.K

A. 298

B. 636.3

C. -157

D. 157

E. -636.3

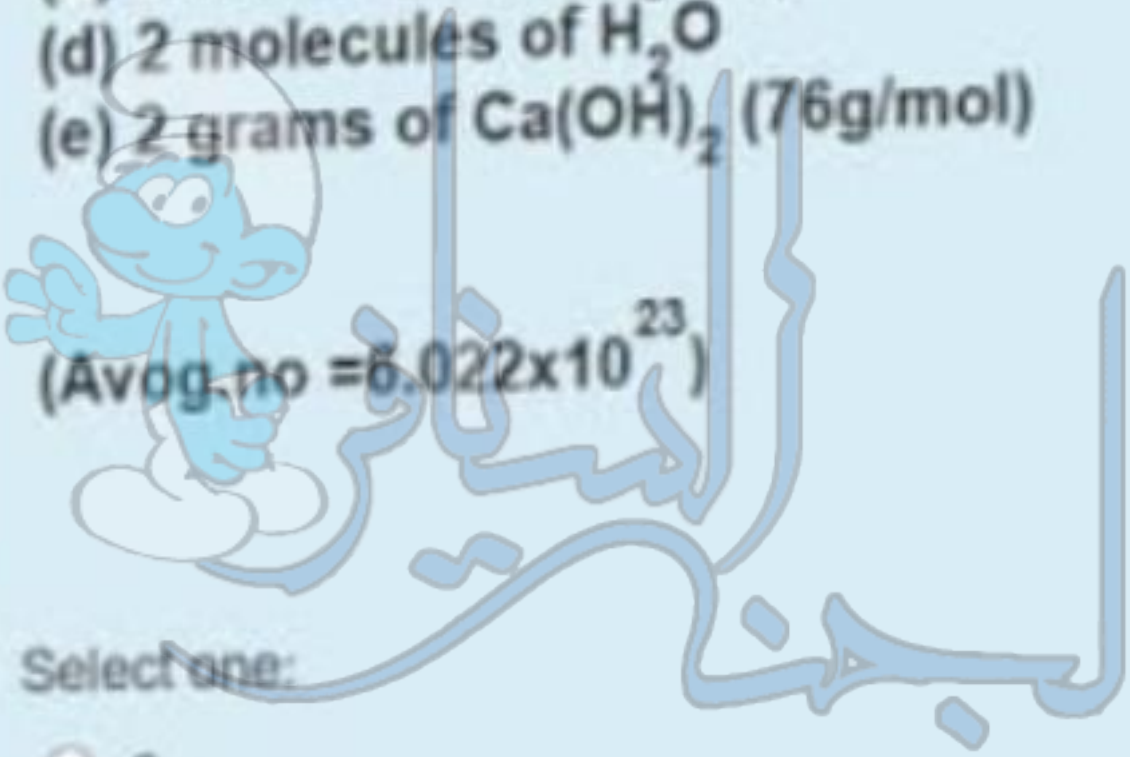
Select one:

- A
- B
- C
- D
- E

You can find 2 oxygen atoms in:

(a) 1 mole of K_2SO_4
(b) 4 moles of Na_2O
(c) 1 molecule of Na_3PO_4
(d) 2 molecules of H_2O
(e) 2 grams of $Ca(OH)_2$ (76g/mol)

(Avog.no = 6.022×10^{23})



Select one:

- a
- b
- c
- d
- e

If piece of metal at 120 °C is placed in 106 g of H_2O at 20 °C.

The final temperature of both water an metal piece was 24°C.

Calculate heat lost by metal in J

(Specific heat for H_2O = 4.184 $J.g^{-1}.C^{-1}$)

Select one:

- 1774
- 3322.4
- -2217.5
- 2217.5
- -1774

Calculate ΔH for the reaction

$IF_{5\,(g)} \rightarrow IF_{3\,(g)} + F_{2\,(g)}$ is _____ kJ,

given the data below.

$IF_{(g)} + F_{2\,(g)} \rightarrow IF_{3\,(g)}$ $\Delta H = -390$ kJ

$1/2\ IF_{(g)} + F_{2\,(g)} \rightarrow 1/2\ IF_{5\,(g)}$ $\Delta H = -372.5$ kJ

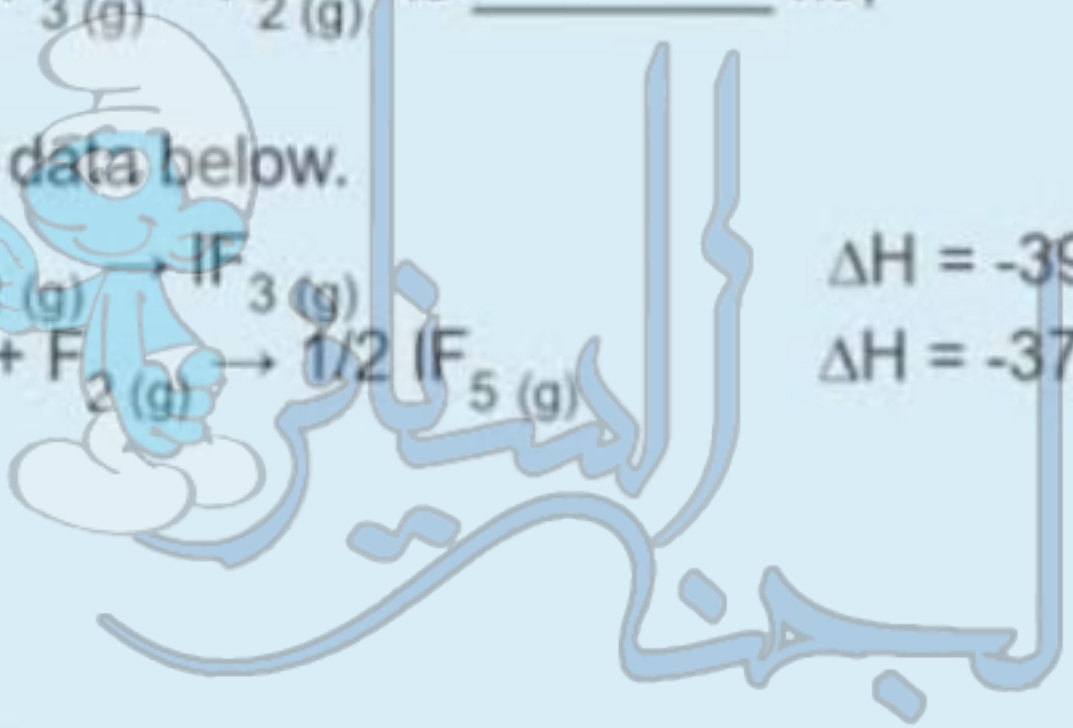
A) -1135

B) +35

C) +1135

D) -35

E) +355



For the reaction:

$$2H_3(PO_4)_{2(aq)} + 3Ca(OH)_{2(aq)} \rightarrow Ca_3(PO_4)_{2(s)} + 6H_2O(l)$$

Calculate mass of $Ca_3(PO_4)_2$(molar mass =310 g//mol) precipitated when 10 mole of $H_3(PO_4)_2$ are allowed to react with 18 mole of $Ca(OH)_2$.

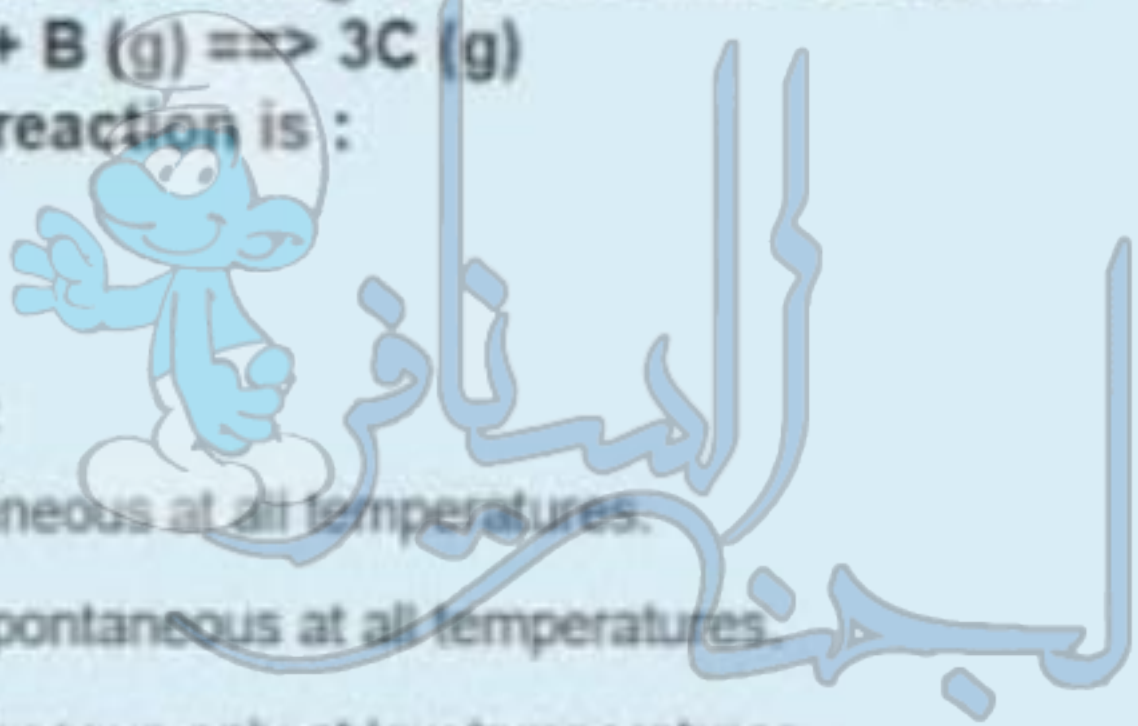
Select one:

- 930 g
- 310 g
- 620 g
- 1240 g
- 1550 g

For the following endothermic reaction

$A(g) + B(g) \Longrightarrow 3C(g)$

This reaction is :



Select one:

- spontaneous at all temperatures.
- non-spontaneous at all temperatures.
- spontaneous only at low temperatures.
- spontaneous only at high temperatures.

Given the following data for this reaction:

$$NH_4^+(aq) + NO_2^-(aq) \Longrightarrow N_2(g) + 2H_2O(l)$$

EXP	$[NH_4^+]$	$[NO_2^-]$	RATE
1	0.010 M	0.020 M	0.020 M/s
2	0.015 M	0.020 M	0.030 M/s
3	0.010 M	0.010 M	0.005 M/s

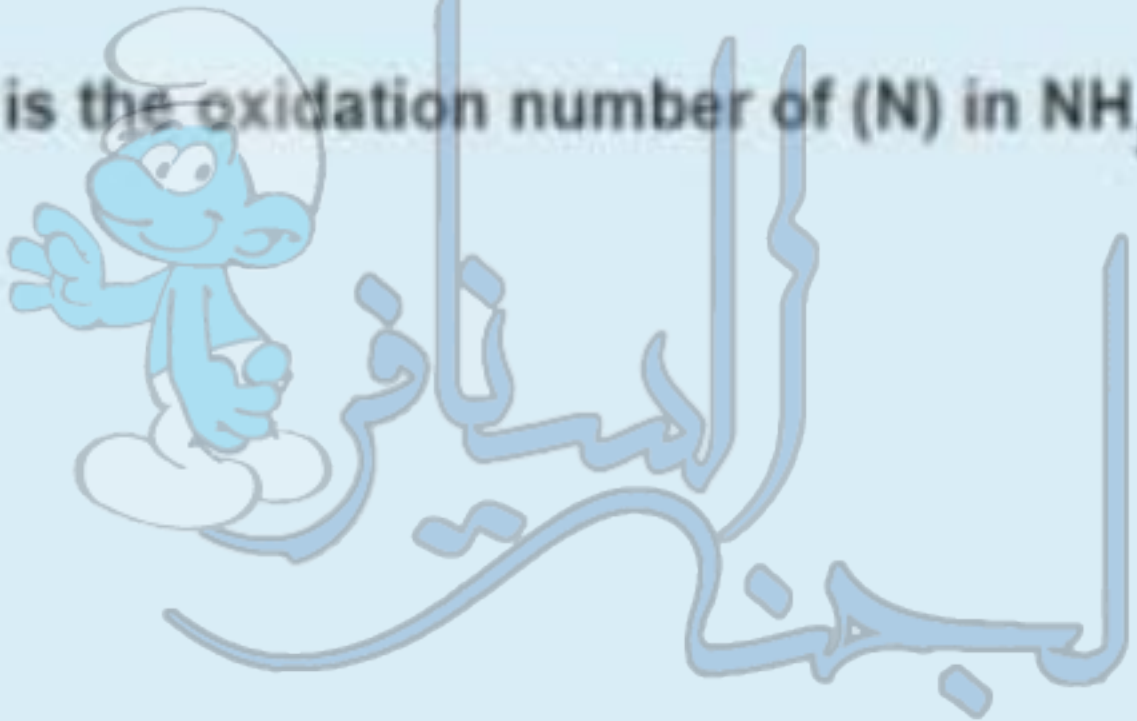
Select one:

- Rate = $k[NH_4^+][NO_2^-]$
- Rate = $k[NH_4^+]^2[NO_2^-]^2$
- Rate = $k[NH_4^+]^2[NO_2^-]$
- Rate = $k[NH_4^+][NO_2^-]^2$
- none

What is the oxidation number of (N) in NH_3

Select one:

- +4
- -3
- -4
- +5
- +3



The equation for the standard enthalpy of formation of calcium carbonate ($CaCO_3$) is:

A. $Ca(s) + C(s) + 3/2\ O_2(l) \rightarrow CaCO_3(s)$

B. $Ca(s) + 2C(s) + 3/2\ O_2(g) \rightarrow CaCO_3(s)$

C. $Ca(s) + C(s) + 3/2\ O_2(g) \rightarrow CaCO_3(s)$

D. $Ca(s) + C(s) + 3O(g) \rightarrow CaCO_3(s)$

Select one:

- A
- B
- C
- D

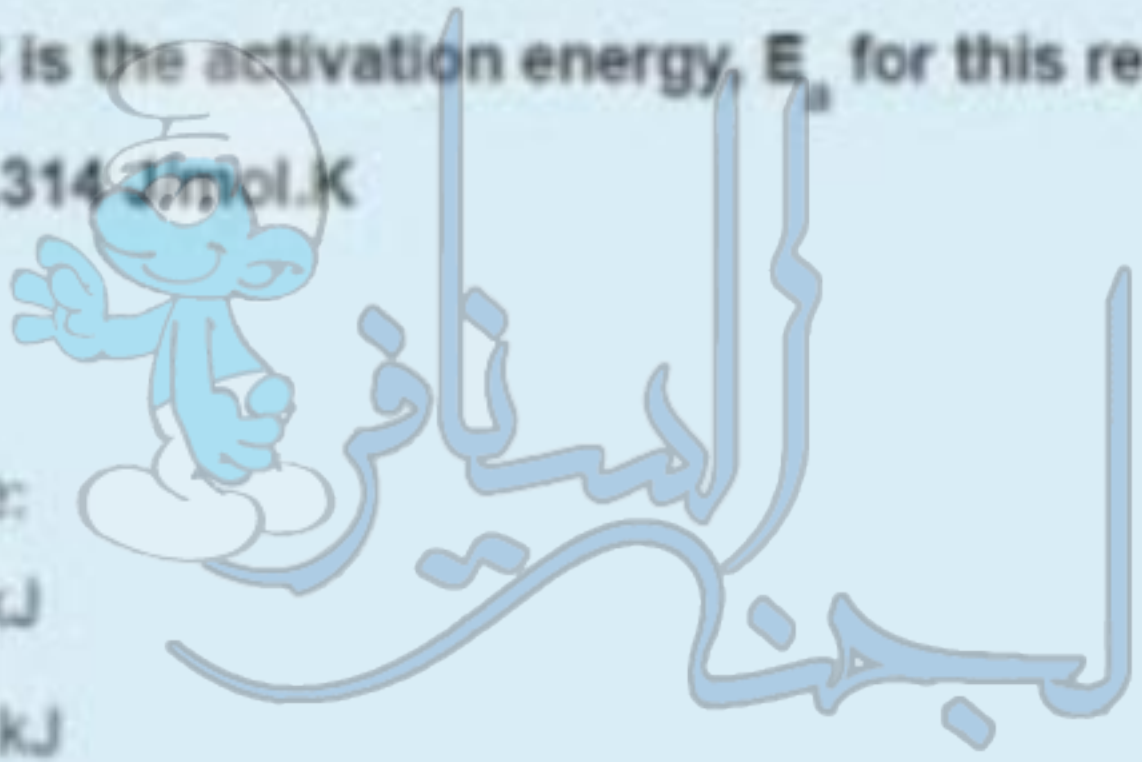
Rate constants for the first-order reaction:

rate constant $k = 4.75 \times 10^{-4}\ s^{-1}$ at 293 K

rate constant $k = 1.63 \times 10^{-3}$ at 320 K.

What is the activation energy, E_a for this reaction?

R =8.314 J/mol.K



Select one:

- 54.8 kJ
- -91.1 kJ
- 35.6 kJ
- 91 kJ
- 44.7 kJ

Which of the following is correct regarding bomb calorimetry and coffee-cup calorimetry

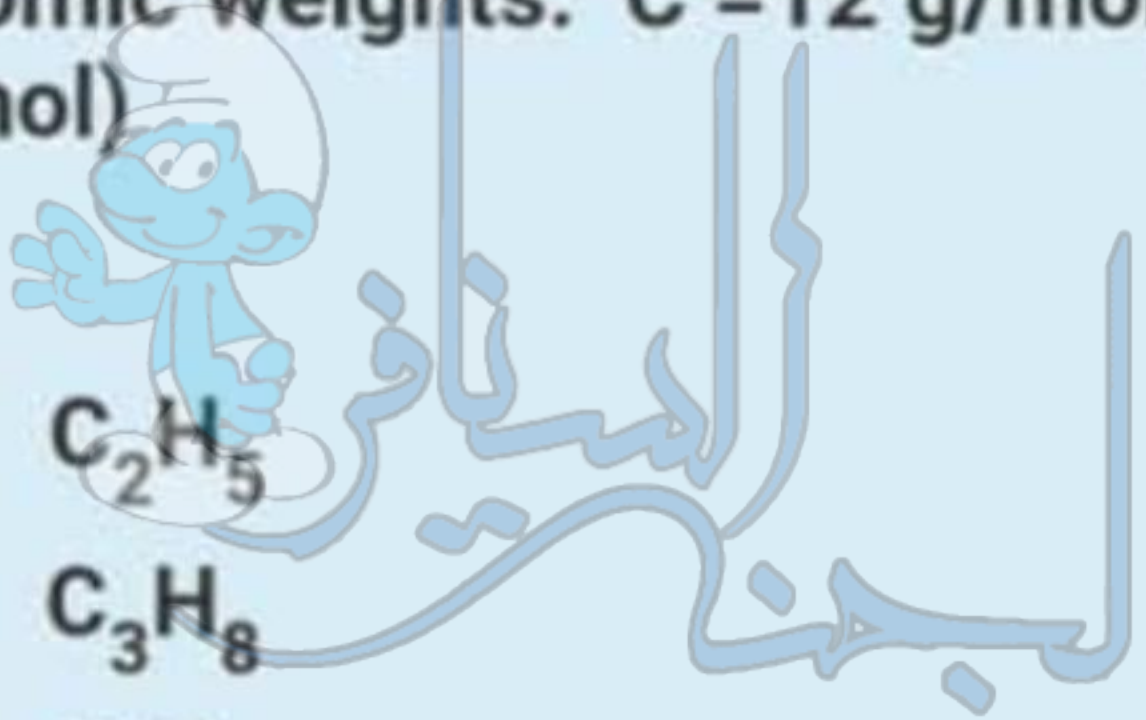
Select one:

- In bomb calorimetry the volume remains constant
- in bomb calorimetry work is zero
- Coffee cup calorimeter is mostly used for solution reactions
- In both techniques, heat flow is measured through temperature changes
- All are correct

Find the empirical formula for a compound that is contains

87.8 % of "C" and 12.2 % of "H"

(Atomic weights: C =12 g/mol, H= 1 g/mol)



A. C_2H_5

B. C_3H_8

C. C_2H_3

D. C_4H_{11}

E. C_3H_5

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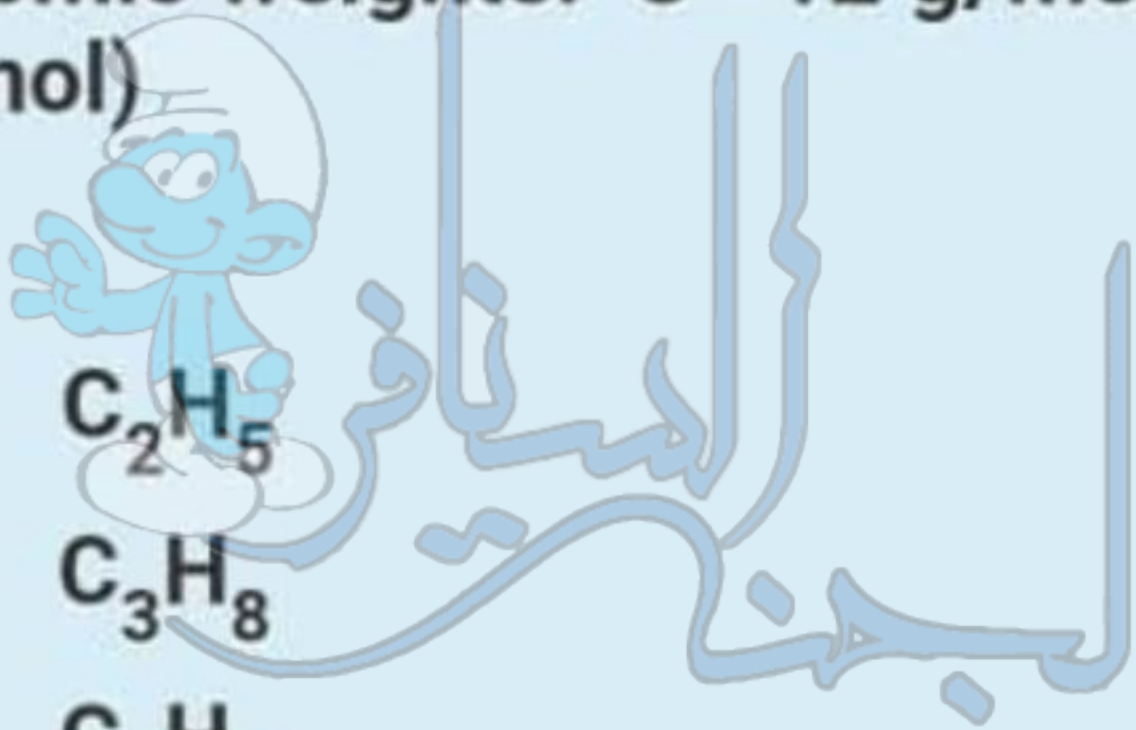

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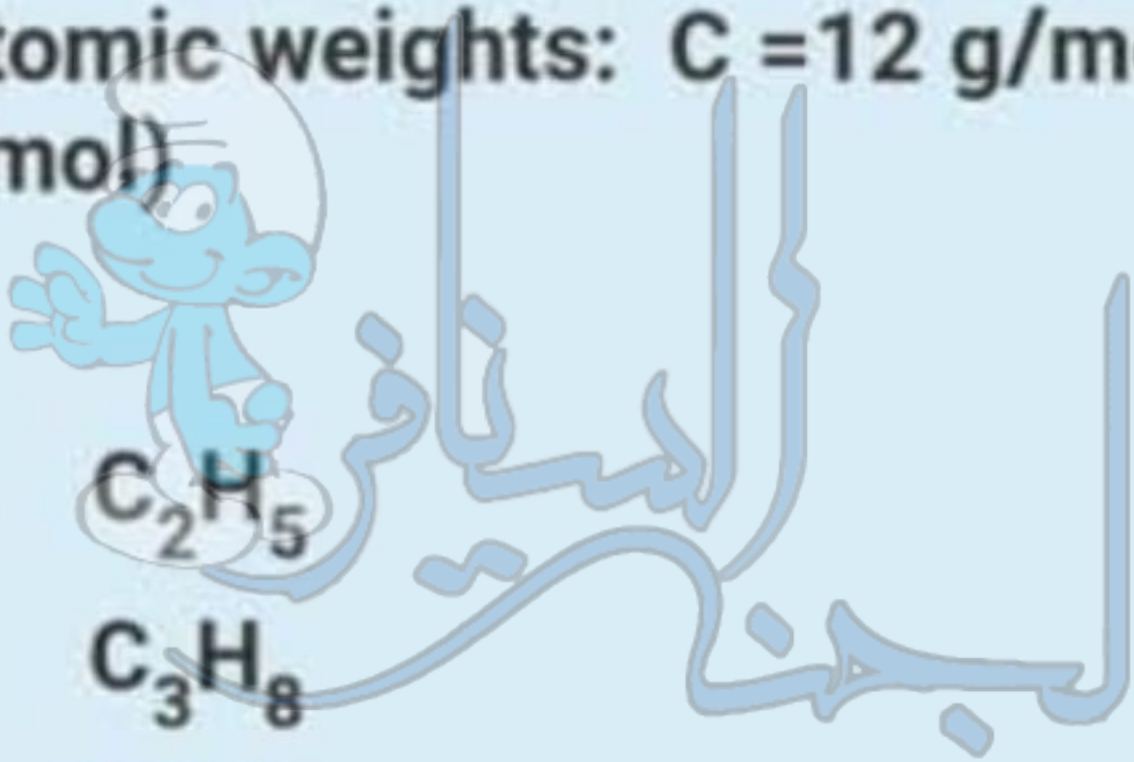


A. C_2H_5

B. C_3H_8

C. C_2H_3

D. C_4H_{11}

E. C_3H_5

Aluminum reacts with oxygen to produce aluminum oxide.

$$4\ Al_{(s)} + 3\ O_{2(g)} \rightarrow 2\ Al_2O_{3(s)}$$

If 10.0 moles of Al react with excess O_2, how many moles of Al_2O_3 can be formed?

A. 1.5 mol
B. 2.0 mol
C. 2.5 mol
D. 5.0 mol
E. 3.0 mol

The quantum number that describes the shape of an orbital is:

A. Principle quantum number
B. Magnetic quantum number
C. Secondary (angular momentum) quantum number
D. Spin quantum number
E. None of the above

For the equation: $2C_3H_7OH + 9O_2 \rightarrow 6CO_2 + 8H_2O$

If 8 g C_3H_7OH (60 g/mol) are allowed to react with 40 g O_2 (32g/mol)

The mass of CO_2 (44g/mol) produced in grams is:

A. 13.75
B. 18.33
C. 22.91
D. 26.4
E. 17.6

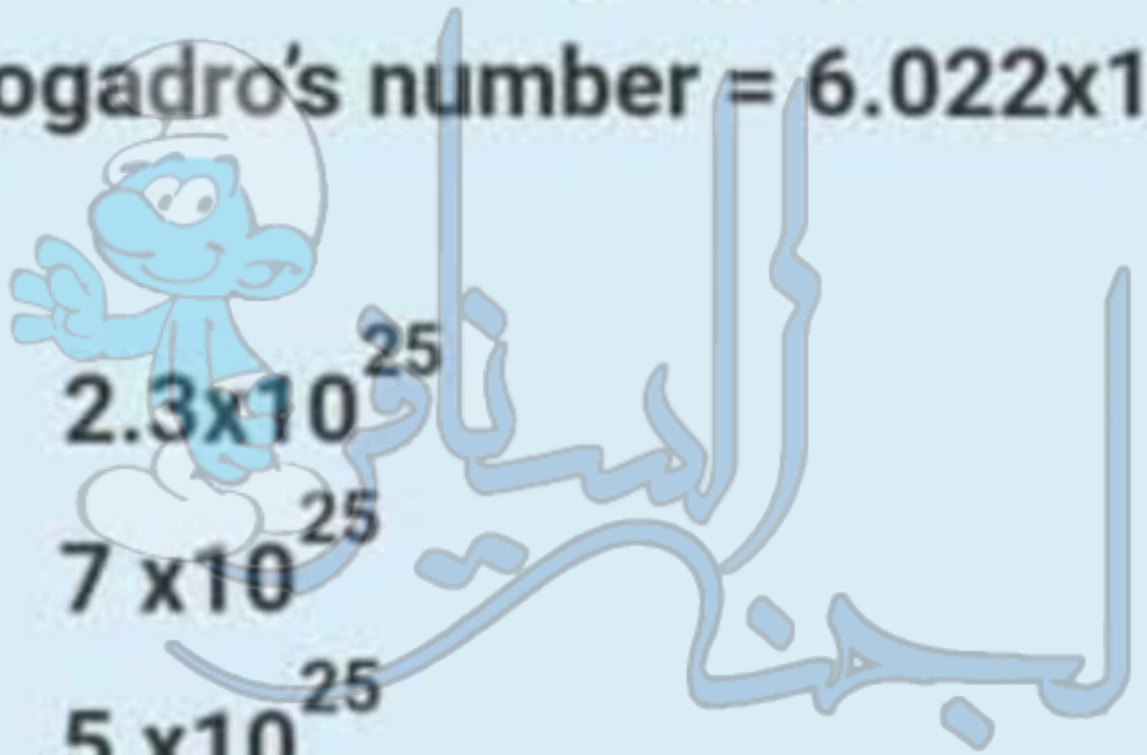
The quantum number that describes the shape of an orbital is:

A. Principle quantum number
B. Magnetic quantum number
C. Secondary (angular momentum) quantum number
D. Spin quantum number
E. None of the above

How many atoms (total number of atoms) are found

in 3.5 mole of $K_2Cr_2O_7$

Avogadro's number = 6.022×10^{23}



A. 2.3×10^{25}

B. 7×10^{25}

C. 5×10^{25}

D. 1.4×10^{26}

E. 3.6×10^{24}

Which of the elements below, is a metal

A) Na (atomic no. = 11)
B) Si (atomic no. = 14)
C) B (atomic no. = 5)
D) Cl (atomic no. = 17)
E) Ar (atomic no. = 18)

Which element has the greatest IE_1 in period 3 ?

A. Ne

B. Ar

C. Li

D. Na

Select one:

- A
- B
- C
- D

The element X (atomic number =23) is a_____ element

with _____ unpaired electrons

A. paramagnetic , 3

B. paramagnetic , 5

C. paramagnetic , 6

D. diamagnetic , 2

E. diamagnetic , 0

Select one:

- A
- B
- C
- D
- E

$1s^2\ 2s^2\ 2p^6\ 3s^2$ is a ground state configuration for a

A. Transition element
B. Alkali metal
C. Halogen
D. Inner transition element
E. Alkaline earth metal

Select one:

- A
- B
- C
- D
- E

How many electrons are there in the valence shell of the Si^{2+} ion?

(atomic number =14)

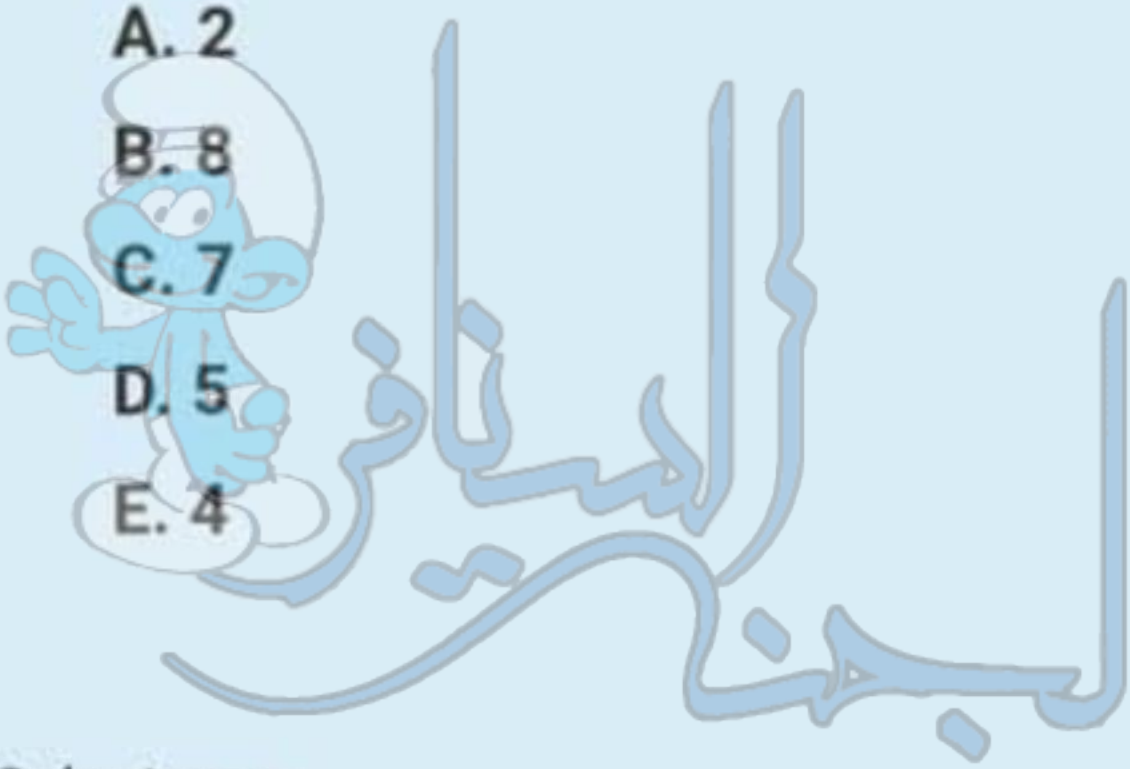
A. 2

B. 8

C. 7

D. 5

E. 4



Select one:

- A
- B
- C
- D
- E