



**EXAM 1<sup>st</sup> TERM**  
December 1<sup>st</sup> 2016



Name: ..... N<sup>o</sup>: ..... 1<sup>o</sup> BAC- .....

1. (1.5 points). Hydrazine is used chiefly as a rocket fuel. This compound contains *only nitrogen and hydrogen* and it is 87.4% *nitrogen by mass*. 0.899 g of hidrazina gas occupies a volume of 1.00 L at 701 mm Hg and 127 °C. What is the *molecular formula* of this compound?

2. (2 points). A 28.0 % (by mass) solution of *sulphuric acid* in water has a density of 1.25 g/mL. Find: a) What is its *molar concentration*? b) How many mL of this acid is required to prepare 150 mL of 0.750 M solution of sulphuric acid?

3. (2 points). *Aluminium reacts with hydrochloric acid to produce aluminium chloride and hydrogen gas*. Find: a) The mass of reactant in excess when 95.4 mL of 0.800 M hydrochloric acid aqueous solution react with 2.50 g of aluminium. b) How many molecules of hydrogen gas will be produced?

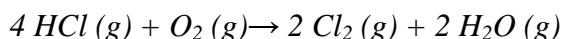
4. (1 point). *Potassium nitrate decomposes completely at high temperature to produce potassium nitrite and oxygen*. If we have a 265 g sample of a mineral containing 85.0 % *potassium nitrate*, calculate the *volume of oxygen* produced at STP.

5. (2 points). a) Calculate the *enthalpy of formation for propane* ( $C_3H_8(g)$ ),  $\Delta H^\circ f(C_3H_8(g))$  from the following data:

$$\begin{aligned} \Delta H^\circ f(CO_2(g)) &= -393.5 \text{ kJ}\cdot\text{mol}^{-1} \\ \Delta H^\circ f(H_2O(l)) &= -285.5 \text{ kJ}\cdot\text{mol}^{-1} \\ \Delta H^\circ c(C_3H_8(g)) &= -2219 \text{ kJ}\cdot\text{mol}^{-1} \end{aligned}$$

b) How much energy is released when of 220 g  $C_3H_8(g)$  is burned?

6. (1,5 points). Determine  $\Delta H$  for the reaction:



Data:

Bond	H-Cl	O=O	Cl-Cl	O-H
$\Delta H_{\text{bond dissociation}}$ (kJ/mol)	432	494	243	463

	H	C	N	O	Al	S	Cl	K
Atomic mass (a.m.u.)	1.00	12.0	14.0	16.0	27.0	32.0	35.5	39.1

7. (1.5 points). a) Write the formula:

Name	Formula	Name	Formula
Iron (II) sulfide		Sodium carbonate	
Phosphoric acid		Methane	
Sulfhidric acid		Dibromine pentaoxide	
Aluminium nitrate		Calcium chloride	

b) Write the name(s):

Formula	Name 1	Name 2
AgClO <sub>2</sub>		
CuOH		
MgSO <sub>4</sub>		
SnO <sub>2</sub>		
PbCl <sub>4</sub>		
NH <sub>3</sub>		
K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub>		



# EXAME 1º AVALIACIÓN

1 de decembro 2016



Nome: ..... Nº: ..... 1º BAC- .....

1. (1.5 puntos). A hidrazina úsase principalmente como combustible para propulsores. Este composto contén unicamente *nitróxeno e hidróxeno* cun 87.4 % en masa de *nitróxeno*. Unha mostra gasosa de 0,899 de *hidrazina* ocupa un volumen de 1 L a 701 mm Hg e 127 °C. Cal é a *formula molecular* deste composto?

2. (2 puntos). Unha disolución acuosa de *ácido sulfúrico* ao 28,0 % (en masa) ten unha densidade de 1,25 g/mL. Determina: a) Cal é a *sua concentración molar*? b) Cantos mL desta *disolución* son necesarios para preparar 150 mL de *disolución de ácido sulfúrico 0,750 M*?

3. (2 puntos). O *aluminio* reacciona con *ácido clorhídrico* para formar *cloruro de aluminio e hidróxeno*. Calcula: a) A masa de reactivo en exceso cando reaccionan 95,4 mL de *disolución acuosa de ácido clorhídrico 0,800 M* reacciona con 2,50 g de *aluminio*. b) *Cantas moléculas de hidróxeno* se producen?

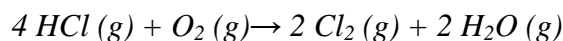
4. (1 punto). O *nitrato de potasio* descomponse a altas temperaturas producindo *nitrito de potasio e osíxeno*. Se temos unha mostra de 265 g dun *mineral* que contén un 85,0 % de *nitrato de potasio*, acha o *volumen de osíxeno* producido en *condicións normais de presión e temperatura*.

5. (2 puntos). a) Calcula a *entalpía de formación do propano (C<sub>3</sub>H<sub>8</sub>(g))*,  $\Delta H^\circ f$  (C<sub>3</sub>H<sub>8</sub>(g)) segundo os seguintes datos:

$$\begin{aligned} \Delta H^\circ f(\text{CO}_2(\text{g})) &= -393.5 \text{ kJ}\cdot\text{mol}^{-1} \\ \Delta H^\circ f(\text{H}_2\text{O}(\text{l})) &= -285.5 \text{ kJ}\cdot\text{mol}^{-1} \\ \Delta H^\circ c(\text{C}_3\text{H}_8(\text{g})) &= -2219 \text{ kJ}\cdot\text{mol}^{-1} \end{aligned}$$

b) *Canta enerxía* se libera cando *arden 220 g de C<sub>3</sub>H<sub>8</sub>(g)*?

6. (1,5 puntos). Determine  $\Delta H$  para a reacción:



Datos:

Enlace	H-Cl	O=O	Cl-Cl	O-H
Entalpía de enlace (kJ/mol)	432	494	243	463

Determine  $\Delta H$  para a reacción:  $4 \text{HCl}(\text{g}) + \text{O}_2(\text{g}) \rightarrow 2 \text{Cl}_2(\text{g}) + 2 \text{H}_2\text{O}(\text{g})$

	H	C	N	O	Al	Cl	K	Cl
Masas atómicas	1.00	12.0	14.0	16.0	27.0	35.5	39.1	35.5

7. (1.5 puntos). a) Escribe a fórmula:

Nome	Fórmula	Nome	Fórmula
Sulfuro de ferro (II)		Carbonato de sodio	
Ácido fosforoso		Metano	
Ácido sulfhídrico		Pentaóxido de dibromo	
Nitrato de aluminio		Cloruro de calcio	

b) Escribe o nome(s):

Fórmula	Nome 1	Nome 2
AgClO <sub>2</sub>		
CuOH		
MgSO <sub>4</sub>		
SnO <sub>2</sub>		
PbCl <sub>4</sub>		
NH <sub>3</sub>		
K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub>		