Progress Test 3

In the periodic table, Oxygen belongs to the sixth group and to the second period, therefore:

-it has a total of 6 electrons
-it has 6 electrons in the last shell
-it has 2 electrons in the last shell
-it has 6 electronic levels

Ethanol and dimethyl-ether are an example of which type of isomerism?

-Optical isomerism
-*cis-trans* isomerism
-positional isomerism
-functional group isomerism

Which of the following formulas would you use to calculate the equilibrium constant of the following homogeneous reactions? $2N_2O_5$ D $2N_2 + 5O_2$

-Kc= $[N_2O_5]^2/[N_2]^2[O_2]^5$
-Kc= $[N_2]^2[O_2]^5/[N_2O_5]^2$
-Kc= $[N_2O_5]/[N_2][O_2]$
-Kc= $[N_2]^5[O_2]^2/[N_2O_5]^2$

Which of the following compounds has an acidic behaviour in water?

-sodium nitrate
-ammonium chloride
-sodium hydrogen carbonate
-potassium sulphate

What does a rod of metal submerged in an aqueous solution of its ion represent?

-a difference in electric potential
-a buffer
-a voltaic cell
-half of a galvanic cell

Write the formulas of the followind compounds
2,2-dimethylpropane; phosphoric acid; 2-propyl ammine; boric acid

-Calculate the osmotic pressure of an aqueous slution containing 0.7 g of glucose and 1 g of potassium sulphate in 500 ml of water at 25°C.

- The following homogeneous gaseous reaction takes place at 900K:
$3H_2 + N_2 <-> 2NH_3$
Determine the numerical value of the equilibrium constant and its units of measurement, knowing that after having mixed 2.7 mol of molecular Hydrogen and 0.9 mol of molecular nitrogen in a volume of 5 L, at equilibrium there are 2.1 mol of molecular Hydrogen.

-1 g of sodium methanoate is added to 500 ml of methanoic acid 0.05 M. Which is the final pH? (Ka = $2 \cdot 10^{-4}$ M).

-Calculate the pH of a solution of ammonia prepared by diluting 5 ml of the commercial solution (30%w, d=0.9 g/ml) in 500 ml of water. (Ignore the variation of volume; Kb= $1.8 \cdot 10^{-5}$ M).