Multiple choice questions

1. What is the orbital notation for the electron in an orbital with the following quantum numbers?

n = 3, *l* = 1

A. 3d
B. 3s
C. 1s
D. 3p
E. 1p

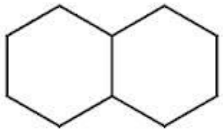
2. Which reaction partner(s) behave as base in the following reversible reaction?

$CO_3^{2-}(aq) + H_2O(l) \rightleftharpoons HCO_3^-(aq) + OH^-(aq)$

A. H_2O
B. HCO_3^-
C. CO_3^{2-} and OH^-
D. H_2O and HCO_3^-
E. CO_3^{2-} and HCO_3^-

3. Which statement is WRONG about water?
A. Water is a good solvent for nonpolar substances.
B. Ice has lower density than liquid water at 0°C.
C. Water has a U-shaped meniscus in glass tube.
D. Water molecules have permanent dipole moment.
E. One water molecule can form four hydrogen bonds with four other water molecules.

4. The molecule represented by the picture on the right is called:
A. naphthalene
B. decaline
C. anthracene
D. purine
E. pyrimidine



5. Which statement is NOT correct for carboxylic acids?
A. Carboxylic acids form Schiff base with amines.
B. Carboxylic acids are usually stronger acids than alcohols.
C. Carboxylic acids can form dimers via hydrogen bonds.
D. Low molecular mass monocarboxylic acids are liquids at room temperature.
E. Carboxylic acids are polar molecules.

Calculation

How many grams of magnesium oxide are produced if 7.30 grams of magnesium is allowed to react with 10 dm^3 of oxygen gas at 273 K and 1 atm? Which is the limiting reactant? (Atomic masses: oxygen: 16 g/mol, magnesium: 24.3 g/mol; R= 0.0821 dm^3atm/Kmol)

$2\ Mg(s) + O_2(g) \longrightarrow 2\ MgO(s)$

Graphic

Complete the following chemical equation and name the reactants and the products.