1. There exists an equilibrium A ⇌ B ⇌ C , the object product is substance B. If we increase the temperature, it is beneficial to increase the yield of product.E1,E2,E3 refer to the activation energy of A,B,C respectively. The phenomenon above indicates that \_\_\_\_\_\_\_\_\_\_
2. E1>E2，E1>E3
3. E2>E1，E2>E3
4. E1<E2<E3
5. E3<E2，E1>E3

Solution: Apply Arrenihus law and we can directly find the answer.

2、If we add a positive catalyst to speed up a reaction at an equiliburim state.Which of the following statement is/are correct?

A.The catalyst increases the rate of the forward reaction much more than reverse reaction.

B.The catalyst doesn’t take part in the reaction and the mass of it will not change before and after the reaction.

C.The catalyst increases the yield of product formed

D.The catalyst decreases the activation energy of a reaction

3、Which of the follwing statements about the reaction rate of an equiliburim reaction is/are true?

A. The rate of a reaction must be increased if the temperature increases

B. A catalyst can accelerate the reaction rate but has no effect on the yield of product or activation energy of the reaction.

C. If we decrease the concentration of reactants, and keep other conditions remained, the rate of the reaction will be decreased.

D. Sometimes we can increase the speed of the reaction by increase the surface area of reactants.

4、Chlorine gas can be prepared by heating a mixture of high-concentrated hydrochloric acid and manganese dioxide with the following reaction equation：

Under the standard condition. Please calculate the **theoratical maximum** moles of Cl2 can be produced if we use 10L of HCl of 36%(mass fraction) to react with exessive MnO2 to gernerate Cl2?

Known that for E(Mn2+/Mn)°= -1.18V, E(Cl2/Cl-)°=1.36V

Solution: First use the nersert equation to derive the minimum concentration of the HCl that can make the reaction happen and we can easily do the next part.(这个题是不是有问题，如何表述才能规避最后那个平衡常数太小是个可逆反应的问题）