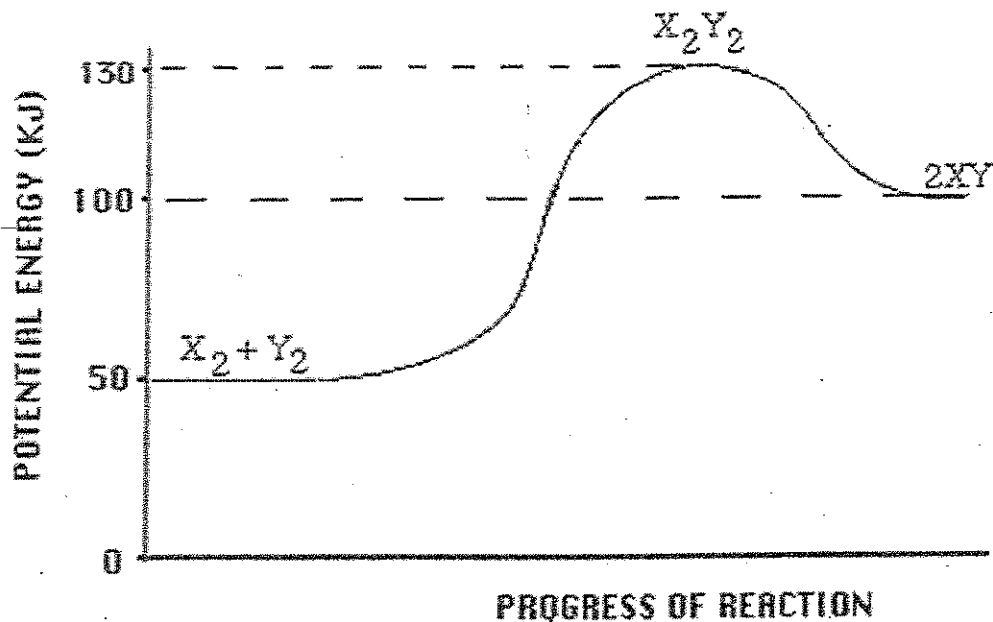


Chemistry 12

Worksheet 1 Potential Energy Diagrams

USE THE POTENTIAL ENERGY DIAGRAM TO ANSWER THE QUESTIONS BELOW:

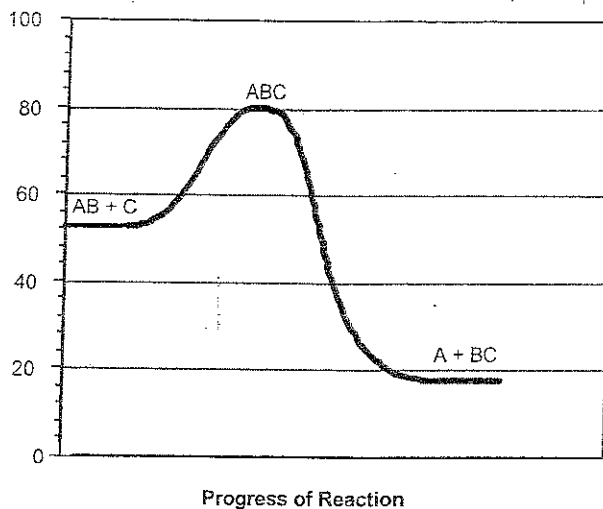


1. Is the overall reaction as shown **exothermic** or **endothermic**? _____
2. What is the **activation energy** for the forward reaction? _____
3. What is the **activation energy** for the reverse reaction? _____
4. What is the **enthalpy change of reaction** (ΔH) for the *forward* reaction? _____
5. What is the ΔH for the *reverse* reaction? _____
6. Is the *reverse* reaction **exothermic** or **endothermic**? _____
7. Which species forms the **activated complex**? _____
8. Which species or set of species has the **highest potential energy**? _____
9. Which do you think would be *faster*, the **forward** reaction or the **reverse** reaction? Explain.

10. Show the ΔH , the Activation Energy for the *forward* reaction and the Activation Energy for the *reverse* reaction on the graph above.

11. State the meaning of *Activated Complex*.

12. Use the following *Potential Energy Diagram* to answer the questions below:



- a) Determine the *Activation Energy* for the *forward* reaction... _____ kJ
 - b) Determine the *Activation Energy* for the *reverse* reaction.... _____ kJ
 - c) What is the *Enthalpy Change* (ΔH) for the *forward* reaction?.. _____ kJ
 - d) What is the *Enthalpy Change* (ΔH) for the *reverse* reaction?.. _____ kJ
 - e) The *forward* reaction is _____ thermic.
 - f) The *reverse* reaction is _____ thermic.
 - g) Which species or set of species forms the *Activated Complex*? _____
13. State the meaning of *Activation Energy*. _____

14. What two requirements must be met before a collision between two reactant particles is *effective*?

1. _____
2. _____

15. Describe what happens to two reactant particles which collide with *less* energy than the *Activation Energy*. _____

16. Burning coal (Carbon) is a highly *exothermic* reaction. However coal, in contact with air at room temperature has such a *slow* reaction that it is not noticeable. Explain these two facts with the help of a Potential Energy Diagram.

