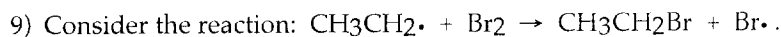


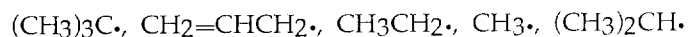
ESSAY. Write your answer in the space provided or on a separate sheet of paper.



Given that this reaction has an activation energy of +6 kcal/mol and a ΔH° of -22 kcal/mol, sketch a reaction-energy diagram for this reaction. Label the axes and show E_a and ΔH° on your drawing.

10) What C_5H_{12} isomer will give only a single monochlorination product?

11) List the following radicals in order of increasing stability (i.e., from least stable to most stable).



12) When $\text{Br}\cdot$ reacts with 1-butene ($\text{CH}_3\text{CH}_2\text{CH}=\text{CH}_2$), the hydrogen atom which is preferentially abstracted is the one which produces a resonance stabilized radical. Draw the major resonance contributing forms of this radical.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

13) How many distinct monochlorinated products can result when isobutane is subjected to free radical chlorination?

- A) 1 B) 2 C) 3 D) 4 E) 5

14) How many distinct monochlorinated products can result when cyclopentane is subjected to free radical chlorination?

- A) 1 B) 2 C) 3 D) 4 E) 5