

本試題是否可以使用計算機： 可使用， 不可使用（請命題老師勾選）

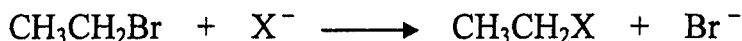
考試日期：0301，節次：1

1. Explain the following terms: (20%)

- a) Saytzeff orientation; b) Regioselective reaction; c) Primary hydrogen isotope effect;
d) E2 reaction; e) Markovnikov's orientation

2. a) Describe the effect of solvent on S_N2 reaction. (8%)

b) Explain the following phenomenon: (7%)



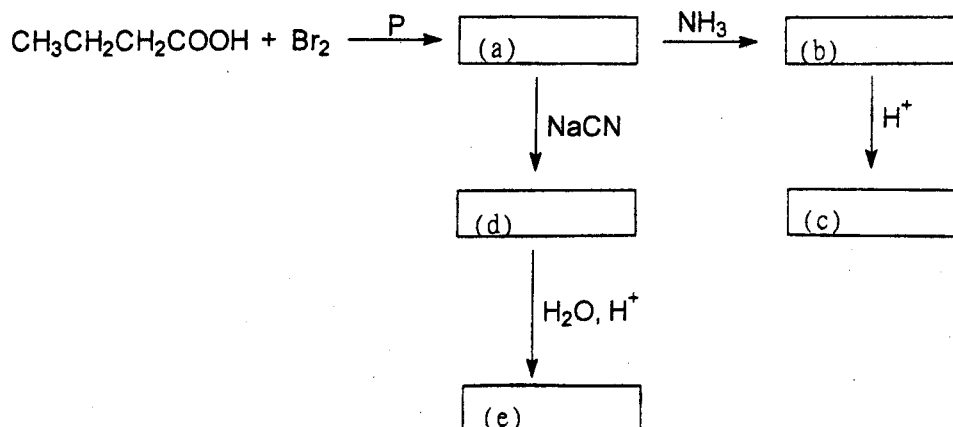
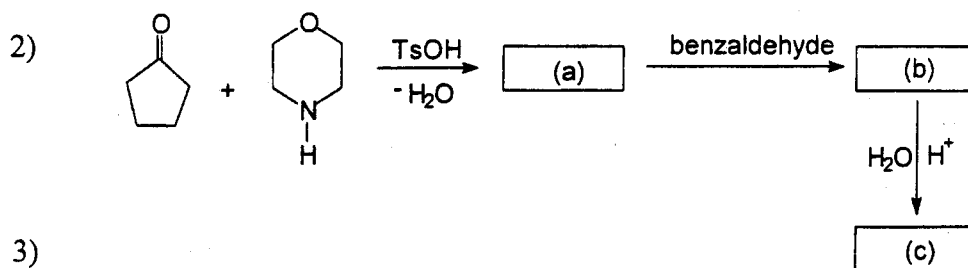
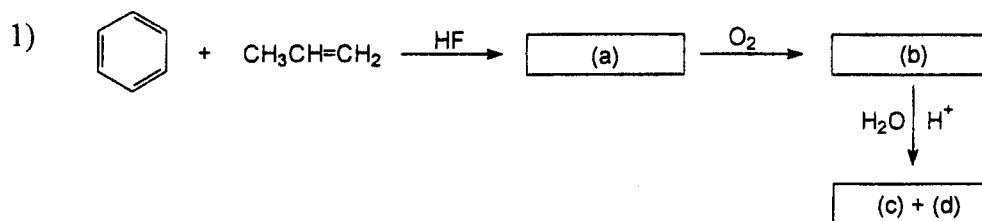
Reactivity in gas phase: $\text{F}^- > \text{Cl}^- > \text{Br}^- > \text{I}^-$

Reactivity in methanol: $\text{F}^- < \text{Cl}^- < \text{Br}^- < \text{I}^-$

3. Write equations to show all steps in the synthesis of 3-methyl-1-butene from isobutyl alcohol. (15%)

4. How to separate the racemic (\pm)-1-phenylethanol into optically active enantiomers? List at three methods and explain the routes briefly. (10%)

5. Complete the following reactions. (24%)



(背面仍有題目,請繼續作答)

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6. Write equations to show all steps in the synthesis of *cis*-2-hexene from 1-pentyne and any alkyl halide needed. (8%)
7. Outline the synthesis of α -methylvaleric acid [$\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}(\text{CH}_3)\text{COOH}$] from malonic ester and alcohols of three carbons or fewer. (8%)