February 14, 2001 SSN\_\_\_\_\_\_Seat No\_\_\_\_\_

1. Complete the following equations. Name all organic reactants and products. (35%)

b. 
$$+ HNO_3 \xrightarrow{H_2SO_4}$$

d. 
$$CH_3-C \longrightarrow C-CH_3 \xrightarrow{1)HBr}$$
 2) HCI

e. 
$$CH_3$$
  $H_2Cr_2O_7$ 

- 2. Draw the structures of the compounds whose names are given below. (20%)
- a. 2-Chloro-4-bromophenol
- b. Trans-2-methylcyclopentanol
- c. 1,4-diphenyl-3-pentanol
- d. Diisopropyl ether
- 3. Write two equations which would allow the preparation of 2-butanol

$$\begin{pmatrix}
H_2 \\
CH_3 & CH_3 \\
OH
\end{pmatrix}$$
in one step. (20%)

4. Write the mechanism for the reaction shown below. (15%)

5. The ir spectrum of an unknown compound shows it to be an alcohol, the mass spectrum gives a molecular weight of 60 and the carbon NMR shows two different kinds of carbons. Propose a reasonable structure for the unknown. (10%)

Grade\_\_\_\_\_