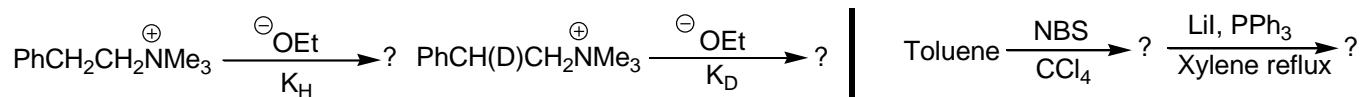


**2<sup>nd</sup> SEMESTER**  
**Mock Test Question on Full Syllabus**  
**F.M.-25, Time-1.5 Hours**

**Attempt Q. No. 1 & any four from the rest**

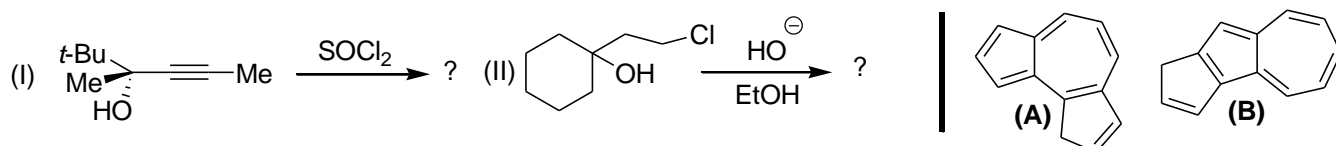
1. (a)  $pK_1$  value of rodizonic acid is less than its  $pK_2$  value. Explain why? (b) Predict the product in the following rection (right below). (c) Explain the  $K_H/K_D$  value 4.6 for the following reaction. **(1.5+2+1.5)**



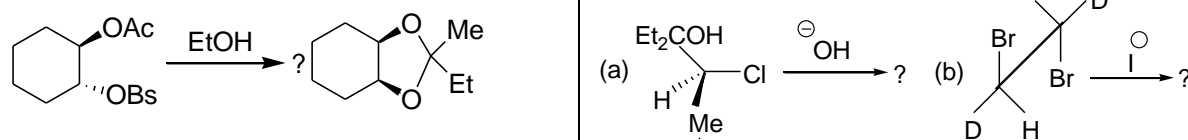
2. (a) Show in citric acid both enantiotopic and diastereotopic H's co-exist. (b) Draw the energy profile diagram of catalyzed reaction where (i) step-I is slow & (ii) step-II is slow. (c) Using the bond dissociation energies predict whether the chlorination of methane is endo or exothermic. (BDE for Cl-Cl: +58 Kcal/mol, H<sub>3</sub>C-H: +104 Kcal/mol, H<sub>3</sub>C-Cl: -84 Kcal/mol, H-Cl: -103 Kcal/mole. **(1.5+1.5+2)**

3. (a) What will be the change in conductivity of boric acid if (R,R)-2,3-butanediol, (R,S)-2,3-butanediol (S,S)-2,3-butanediol are separately treated with boric acid. Explain. (b) Show the valence tautomerism of benzene oxide. (c) What is shell process? **(2+1.5+1.5)**

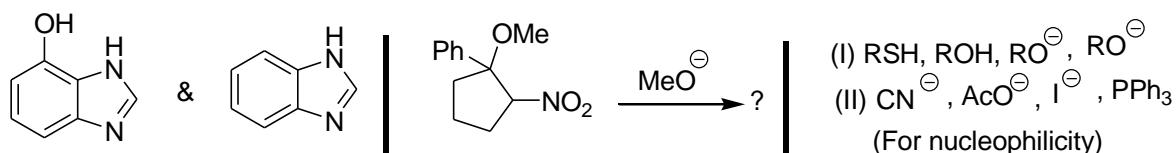
4. (a) Predict the product with **mechanism**. (b) Compare the acidity between A & B.



5. (a) What is the significance of the reaction? **(2)** (b) Predict the products with **mechanism** **(3)**



6. (a) Arrange the following nucleophiles in order of their reactivity (Right below). (b) Between the following compounds which one is more volatile & why? (Left below) (c) Show the reaction product and also mention the nature of reaction? **(1.5+1.5+2)**



7. (a) Arrange Find out the absolute configuration of the following molecule. (b) Draw the energy profile diagram for (i) multistep reaction & (ii) exothermic reaction at room temperature. (c) Find out the topic relationship between H<sub>A</sub> & H<sub>B</sub> in the following compounds. (d) Give example of Cope elimination reaction. **(1+1.5+1.5+1)**

