

Time: 2 Hours

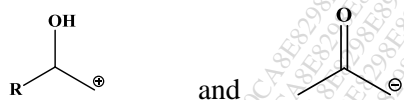
Marks: 40

- N.B.:** 1. All Questions are compulsory  
2. Figures to right indicate full marks

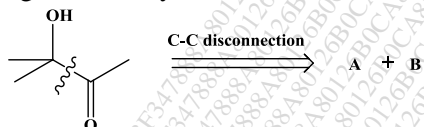
**Q. 1** Answer the following in brief. Draw structures wherever required. **10M**

i. Define: a. Disconnection b. Retrosynthesis analysis **2M**

ii. Suggest suitable synthetic equivalents for the following synthons **2M**

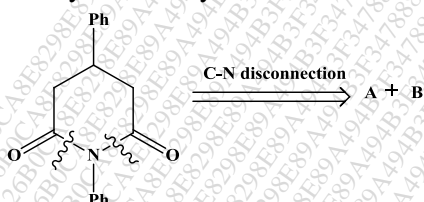


iii. Identify synthon A and B in the given retrosynthesis reaction **2M**

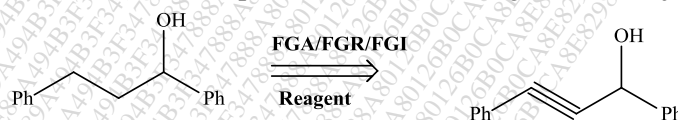


iv. Discuss any two disconnection rules by giving suitable example **2M**

v. Identify A and B in the given heterocyclic retrosynthesis **2M**

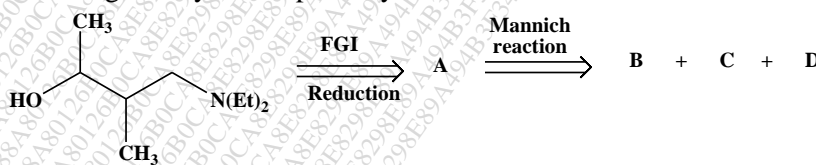


**Q.2. i.** Identify the following conversion as Functional Group Interconversion (FGI) or Functional Group Addition (FGA) or Functional Group Removal (FGR) and give suitable justification **3M**

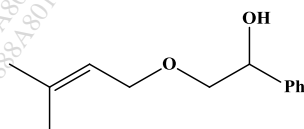


ii. Suggest the economical and simple retrosynthetic pathway and synthetic scheme for 4,4-diphenyl-4-hydroxybutan-2-one **OR** 1,1,4,4-tetraphenyltetrahydrofuran **3M**

iii. Complete the following retrosynthetic pathway **4M**



**Q.3 i.** Assign the bond polarity for the given compound. Suggest the suitable route for disconnection and justify. **3M**

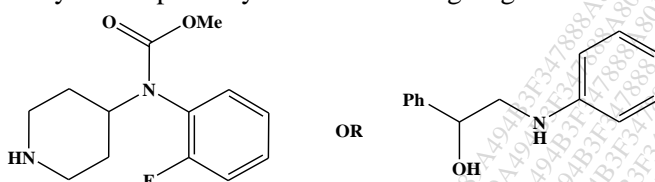


ii. Write the retrosynthesis of 2-aminopyrimidine **OR** pyridine using "3+3" strategy. **3M**

iii. Suggest the frequently used retrosynthetic pathway for Benzocaine **OR** Diphenylamine. **4M**

Q.4. i. Discuss logical retrosynthetic pathway for the following target molecule

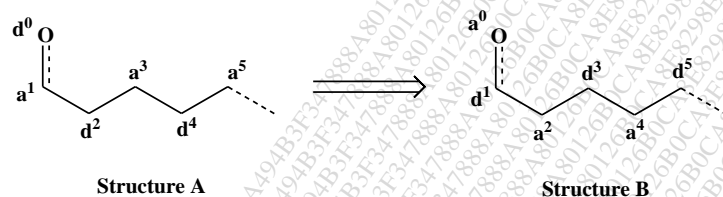
3M



ii. In the following structures A and B, one compound has the polarity issue. Identify the compound which has the polarity issue and suggest method for reversing the polarity.

Note:  $d^0$ ,  $d^1$ ,  $d^2$ ,  $d^3$ ,  $d^4$  and  $d^5$  are donor functional groups and  $a^0$ ,  $a^1$ ,  $a^2$ ,  $a^3$ ,  $a^4$  and  $a^5$  are acceptor functional groups.

3M



iii. Design retrosynthetic and synthetic scheme for Isoniazid OR Propranolol.

4M