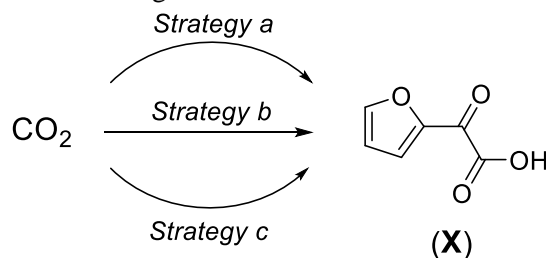
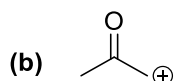
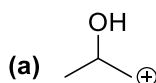


There are four questions in all. All questions are compulsory. Answer the sub-parts of a question together.

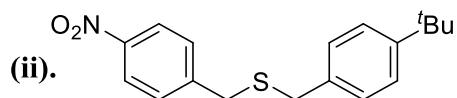
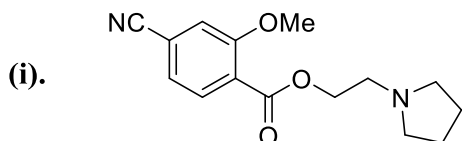
Q. No. 1. (i). Propose **three** different forward synthetic strategies (**a-c**) to prepare the given target molecule (**X**), starting from substituted furan derivatives and using CO₂ as one of the partner. Show all reagents/sub-steps involved in the three requisite chemical strategies. [2.5+2.5+2.5=7.5]



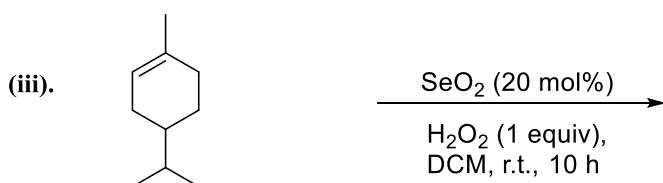
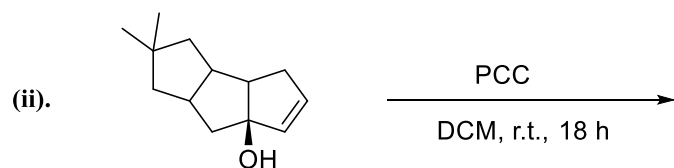
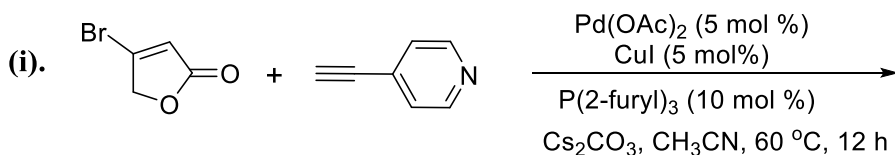
(ii). Label the following synthons using acceptor^(0,1,2,3...)/donor^(0,1,2,3...) notation, and write their corresponding synthetic equivalents. [1+1+0.5=2.5]



Q. No. 2. Suggest a retrosynthetic analysis for each of the following target molecules. In each case, identify the type of disconnection. Suggest suitable synthons and synthetic equivalents. (*Forward synthesis will not evaluative*) [6+4=10]



Q. No. 3. Identify the final product for the following chemical transformations, and propose detailed mechanisms for their formation. [5+5+5]



Q. No. 4. Identify the structures of **A-J** for the following transformations. (*No mechanism required*)[1.5x10=15]

