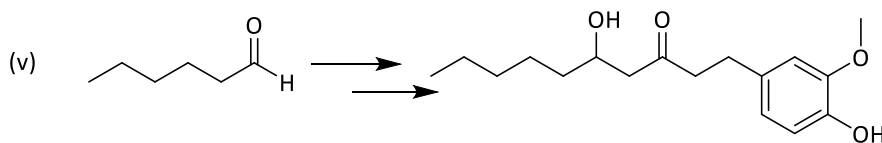
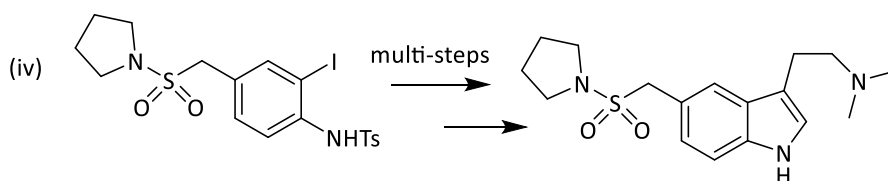
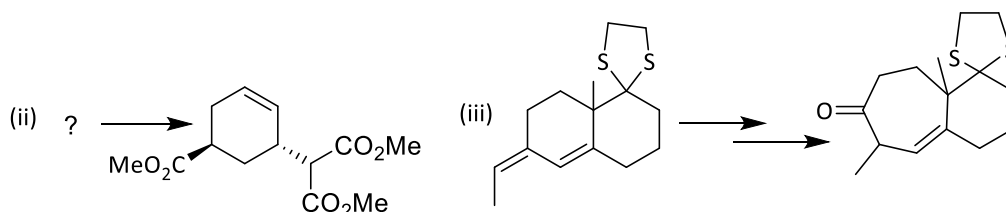
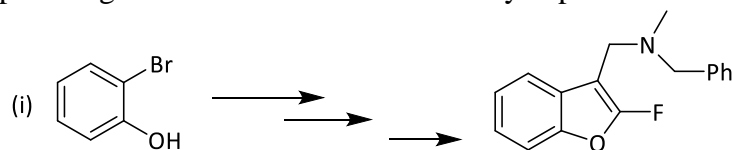


Q 1 Using Heck/Tsuji–Trost coupling reaction or any other suitable reaction, prepare the target compounds given below and mechanistically explain the involved synthetic steps **40**

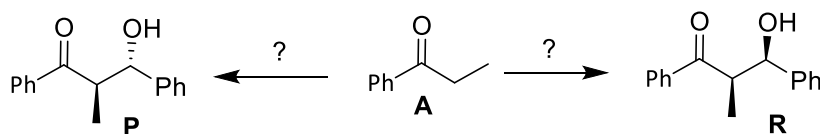


Q 2. (a) Comment on the stability of the following complexes **4**

- (i) bis(η^6 -benzene)chromium(0) (ii) bis(η^5 -cyclopentadienyl)cobalt(II)

(b) Write the required reagents/conditions to prepare the stereoisomers **P** and **R** from ketone **A**.

Explain the different stereochemical outcome in the formation of **P** and **R** **6**



(c) Write the structures for each of the following **4**

- (i) JohnPhos (ii) SPhos

(d) Using suitable ammonia surrogate and aryl chloride prepare *p*-*t*-butylaniline **2**

(e) What is the oxidation state of palladium in following pre-catalyst. Write the steps and reaction conditions required to generate active palladium. How the pre-catalyst is superior to valuable precursor, Pd₂(dba)₃. **4**

