

INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR

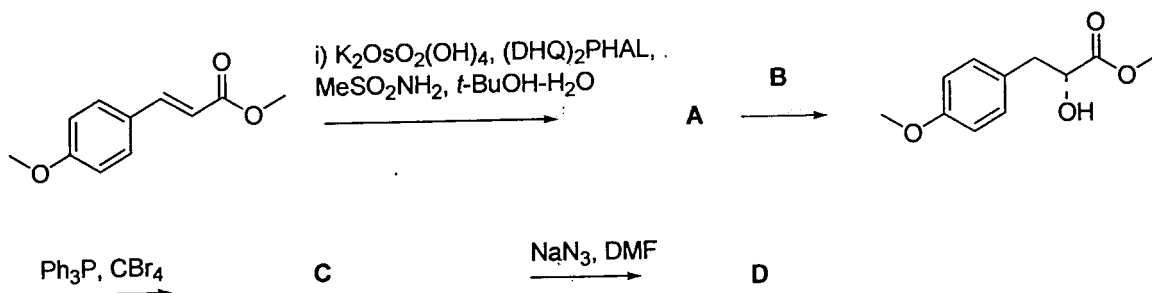
Date: FN / AN **Full Marks/Time:** 50/3 h **Autumn Semester 2012-13**
No. of students: 39 (1st yr of joint MSc-PhD course) **Department:** Chemistry
Subject No/Name: CY41011 / Principles of Organic Synthesis

Answer all the questions.

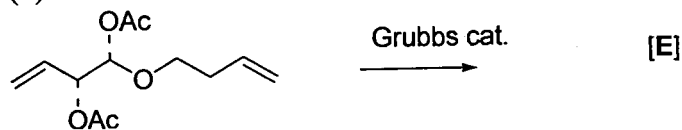
1. Provide an appropriate structure/ formula for each of the alphabets in bold.

[16 x 1 = 16]

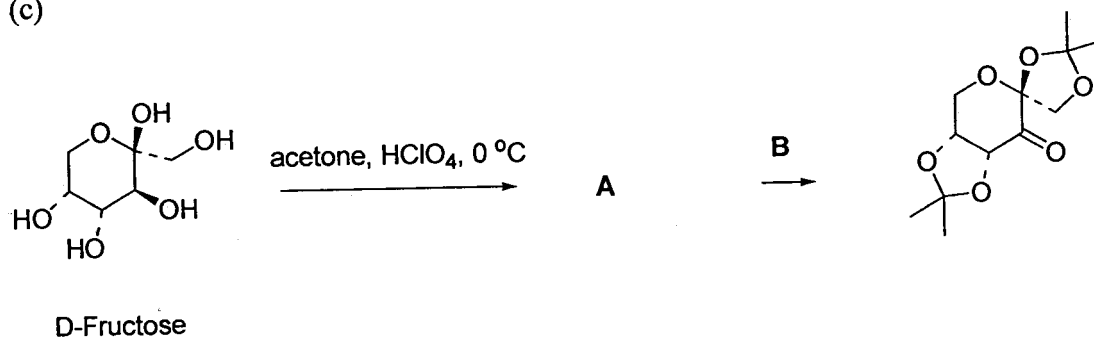
(a)



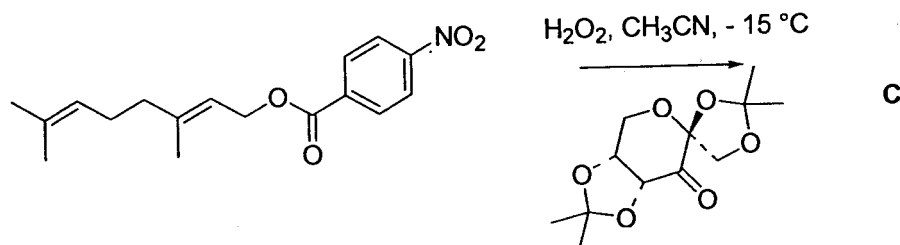
(b)

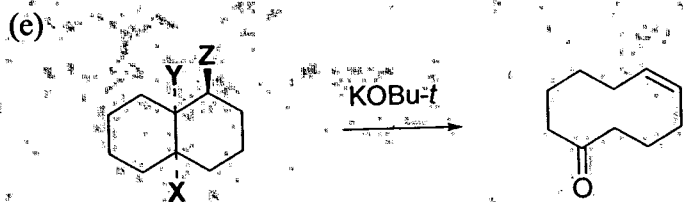
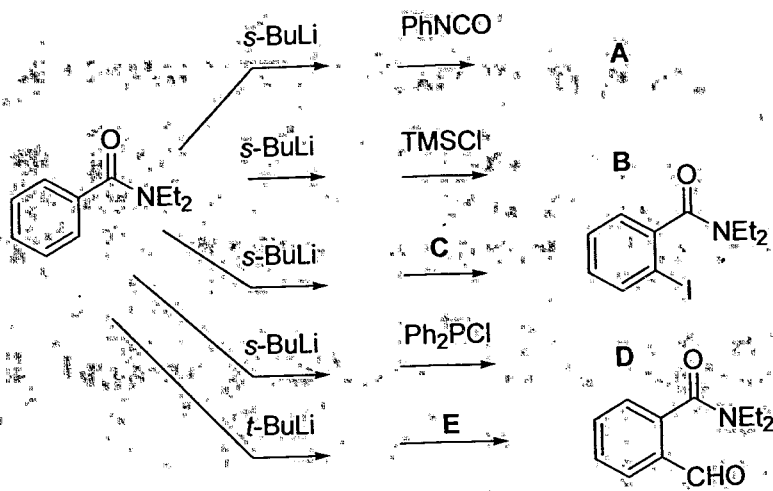


(c)



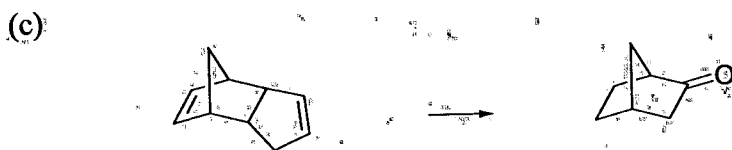
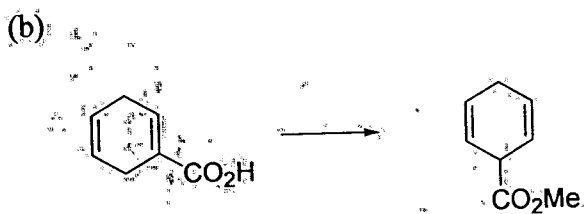
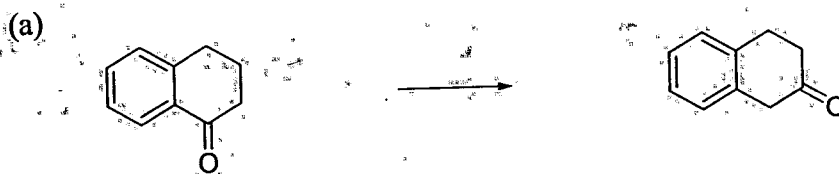
(d)





2. Suggest a synthetic route for each of the following transformations.

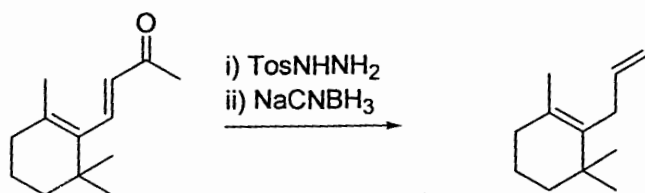
[3 x 3 = 9]



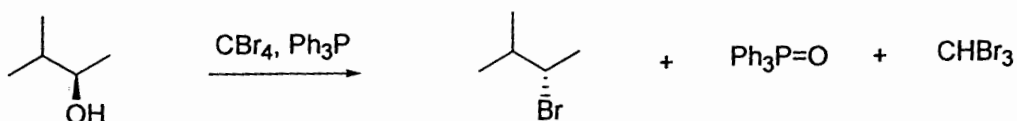
4. Propose an electron-arrow mechanism for the transformations given below.

[3 x 3 = 9]

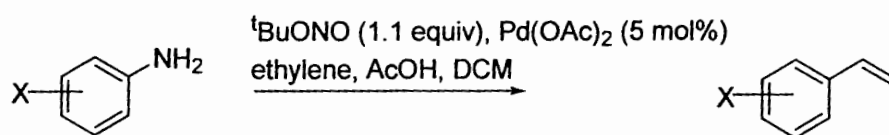
(a)



(b)

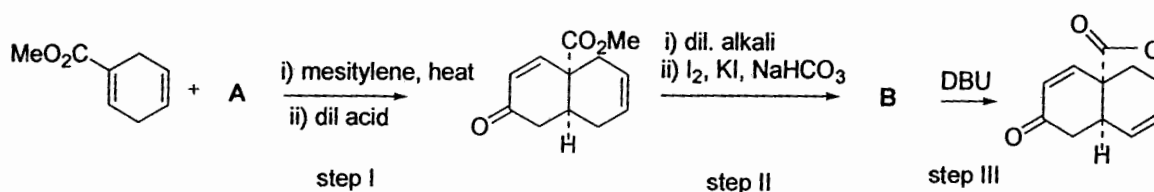


(c)

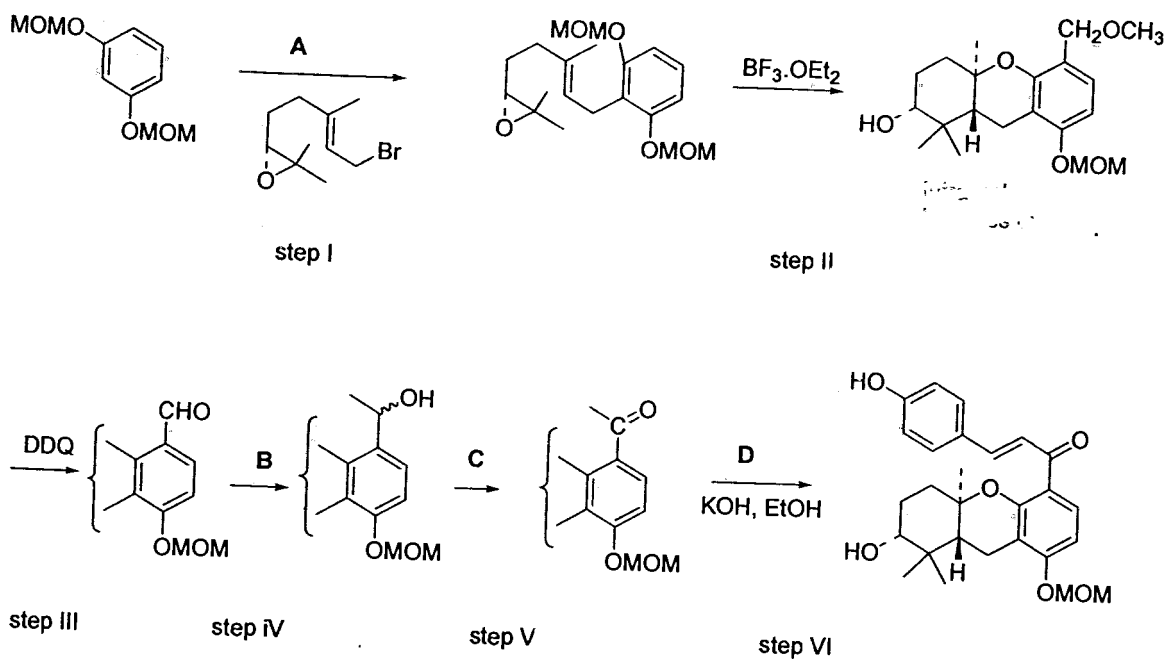


5. For Schemes 1-3, write the structures of **A**, **B**, **C** and **D**. Suggest a mechanism for each of the steps I-III of Scheme 1, steps I and II of Scheme 2 and step II of Scheme 3 to justify the stereochemistry of the products wherever applicable. [7 + 5 + 2 + 2 = 16]

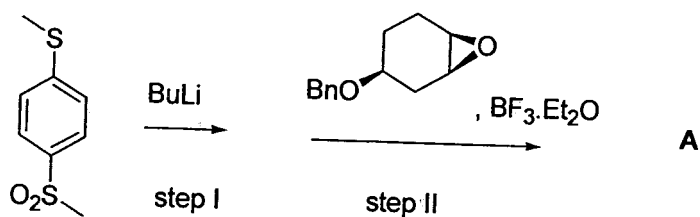
Scheme 1.



Scheme 2.



Scheme 3.



6 (This is meant for bonus marks). Suggest a mechanism with proper perspective structures for the following transformation.

[3]

