

PROBLEM SET 3 SOLUTIONS

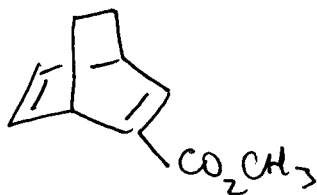
5.13, FALL 2003

1. (WADE 15-30)

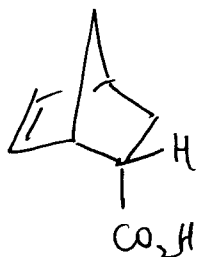
a.



b.

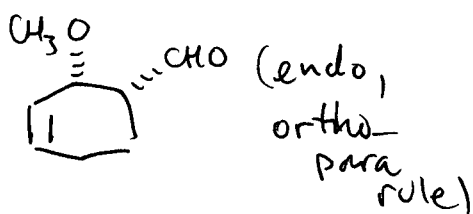


c.



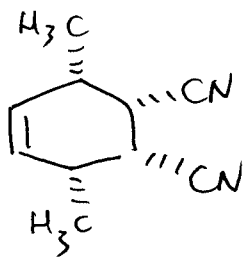
(endo)

d.



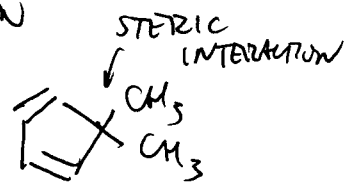
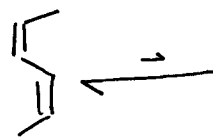
(endo, ortho-para rule)

e.

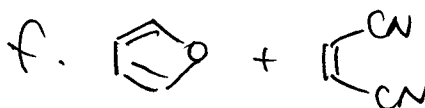
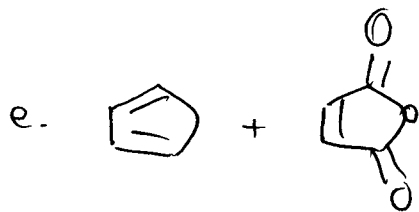
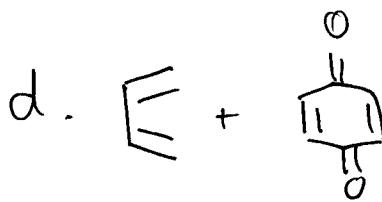
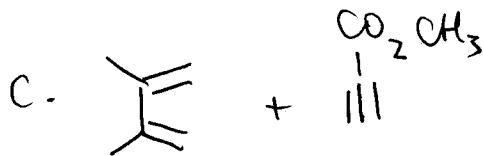
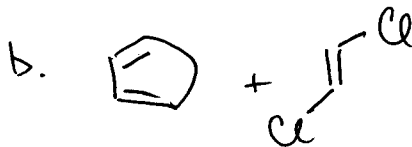
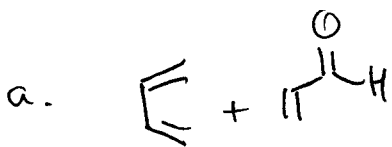


(same as (d.))

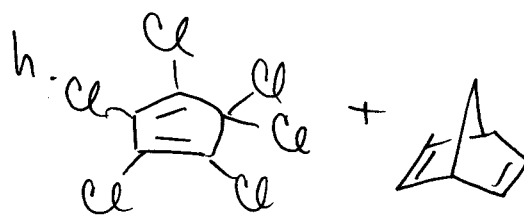
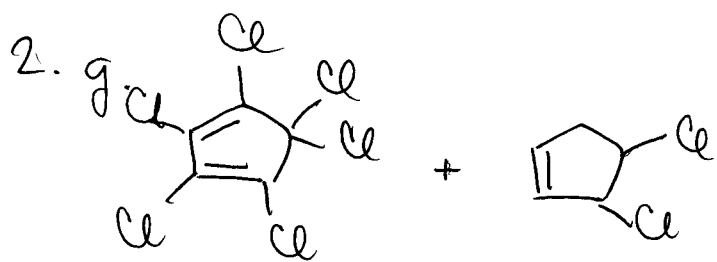
f. NO REACTION



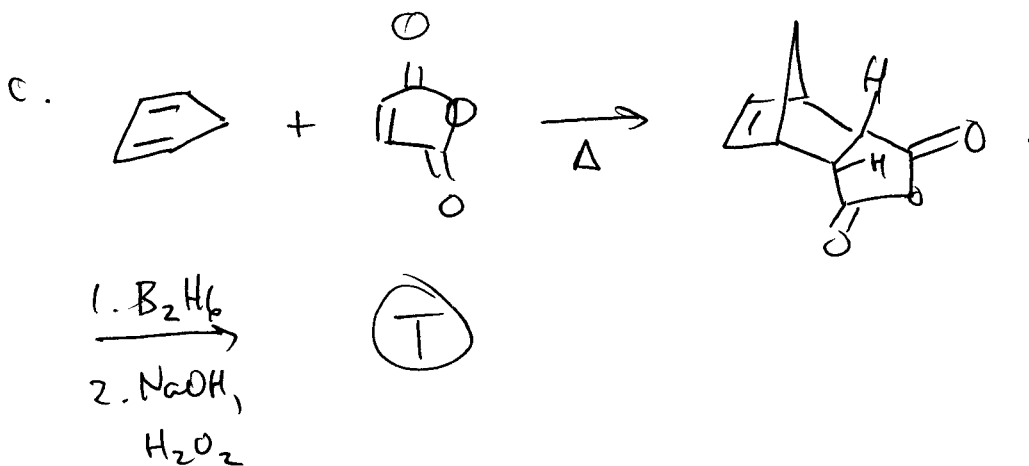
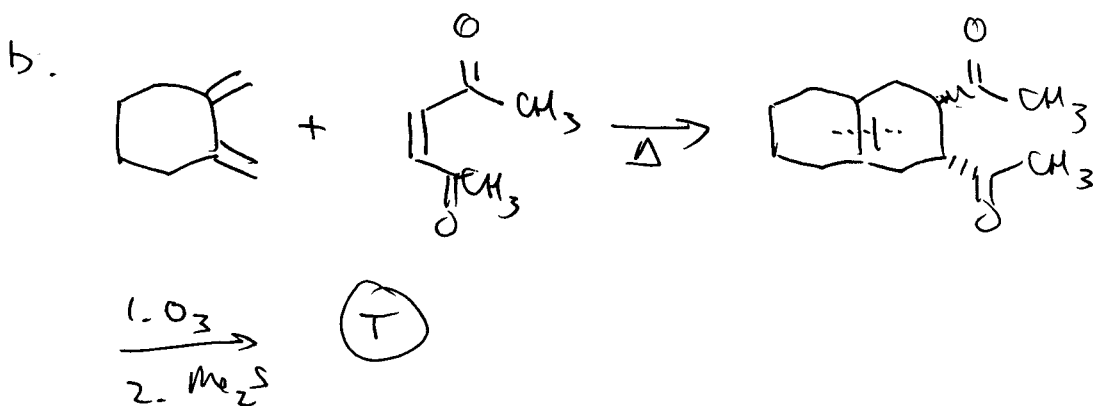
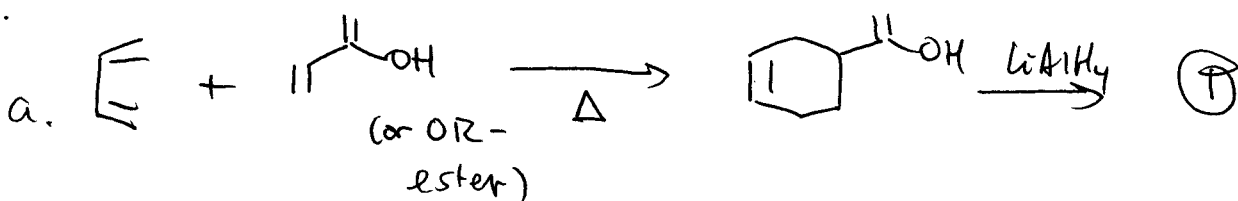
2. (WADE 15-33)



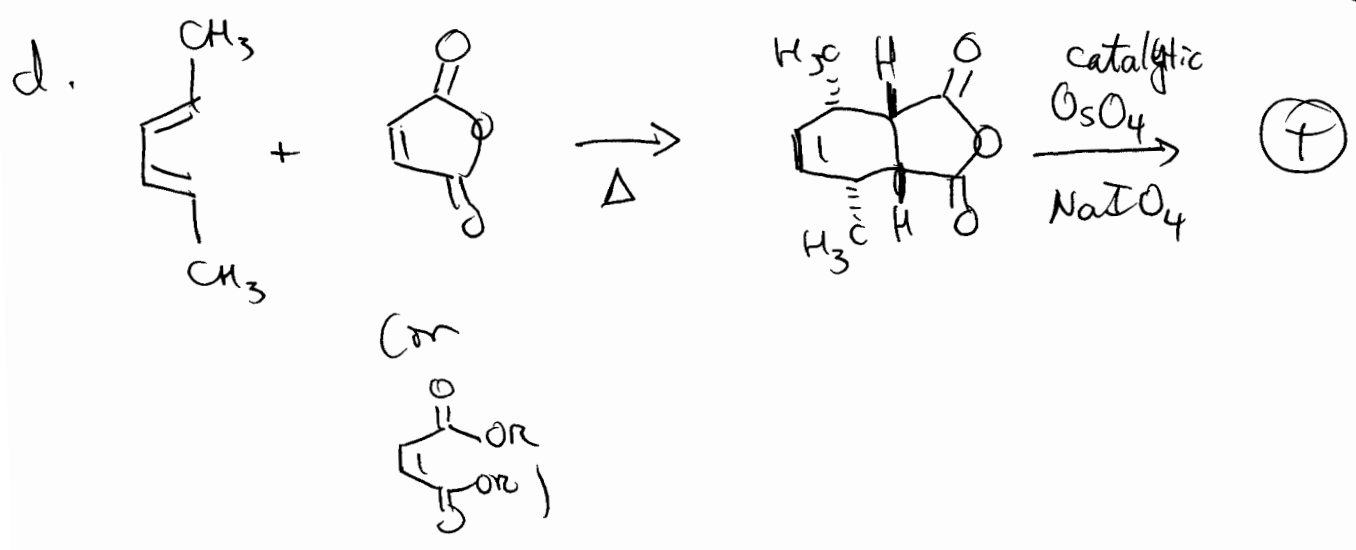
(2)



3. "T" = TARGET



(HYDROBORYATION)



4. TROPOLONE HAS AROMATIC CHARACTER; CYCLOPENTADIENONE HAS ANTI-AROMATIC CHARACTER.

∴ LESS REACTIVE

∴ MORE REACTIVE

5. (NOT GRADED)

THERMAL 4π-electron ELECTROCYCLIC RING-OPENING IS CONROTATORY (with twists), WHICH WOULD PUT A TRANS DOUBLE BOND IN THE PRODUCT FROM (C).

6 a. (NOT GRADED)

THERMAL 4π ELECTROCYCLIC RING-OPENING; ~~CONROTATORY~~ CONROTATORY AND PHOTOCHEMICAL 4π E.R.O.; DISROTATORY

b. 6π THERMAL SIGMATROPIC REARRANGEMENT (CLAISEN)

c. $\pi 4s + \pi 2s$ DIELS-ALDER

d. 6π THERMAL SIGMATROPIC REARRANGEMENT

e. $\pi 4s + \pi 2s$ DIPOLAR CYCLOADDITION

f. 6π THERMAL ELECTROCYCLIC RING-CLOSING, DISTORTATORY.

7. (NOT GRADED)

