

SARDAR PATEL UNIVERSITY

M.Sc. (Chemistry), Semester – IV

November 23, 2019: Saturday

Time: 02:00 PM – 05:00 PM

Topics in Organic Chemistry [PS04EORC21]

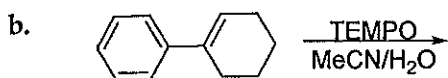
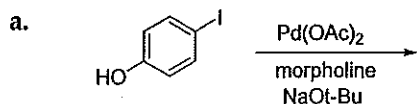
Note: Figures to the right indicate full marks.

Total marks: 70

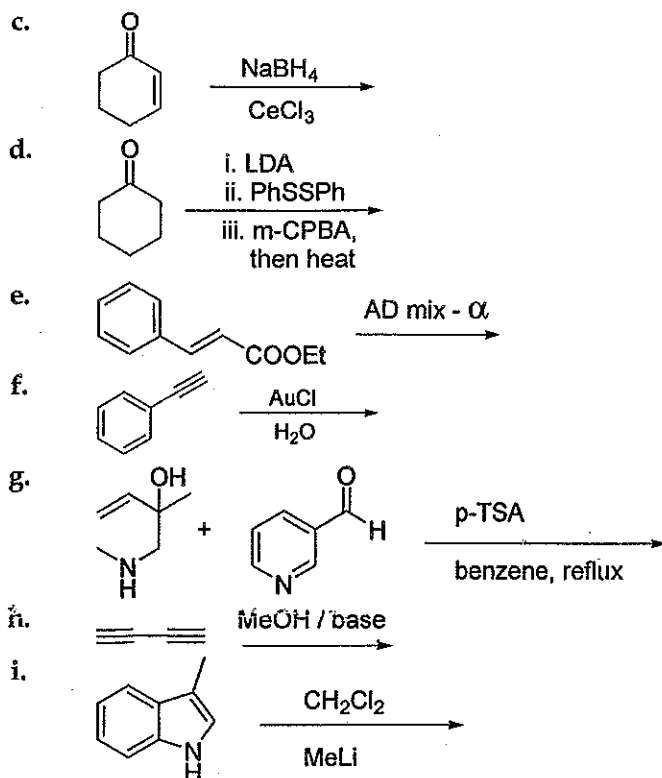
Q-1 Select the correct answer and mention only the code of correct answer against their question numbers. [08]

- a. Which of the following reaction/reagent DO NOT follow radical mechanism?
 (i) TEMPO (iii) Luche
 (ii) McMurry (iv) Both (i) and (ii)
- b. Which of the following reaction involves organic azides as one of the starting materials?
 (i) Staudinger (iii) Ritter
 (ii) Corey-Fuchs (iv) Nef
- c. Alkynes can be converted to *cis*-alkenes by _____
 (i) Na / Liq. NH₃ (iii) Lindlar's catalyst
 (ii) LiAlH₄ (iv) Red Al
- d. Which of the following is chiral?
 (i) methyl phenyl sulphide (iii) methyl phenyl sulfone
 (ii) methyl phenyl sulfoxide (iv) dimethyl sulfoxide
- e. Among the following synthetic equivalent for acetyl anion is.....
 (i) acetyl chloride (iii) 1,3-dithiane
 (ii) nitroethane (iv) acetomitrile
- f. Which coupling reaction uses "Mg" as the organometallic component?
 (i) Suzuki (ii) Hiyama (iii) Negishi (iv) Kumada
- g. ¹³C NMR spectrum of DMSO-*d*₆ gives a signal at 39.7 ppm as a.....
 (i) singlet (ii) septet (iii) quartet (iv) triplet
- h. Which of the following is NOT the example of C-C coupling reaction?
 (i) Buchwald-Hartwig (ii) Sonogashira
 (iii) Suzuki (iv) Hiyama

Q-2 Suggest the products of ANY SEVEN of the following reactions. [14]



(P.T.O)



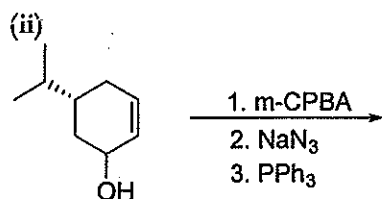
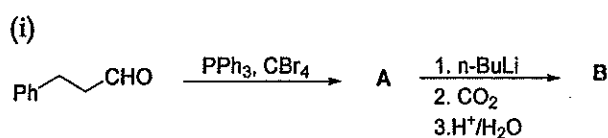
Q-3 [A] Explain the following reactions with suitable mechanism. [06]
 (i) Sonogashira cross coupling reaction
 (ii) Stille coupling reaction

Q-3 [B] Write a short note on oxidative addition and reductive elimination with appropriate examples for each [06]

OR

Q-3 [B] Answer the following [06]
 (i) Describe briefly on Wacker oxidation with appropriate mechanism.
 (ii) Explain olefin metathesis in detail.

Q-4 [A] Complete the following reactions by giving suitable mechanism [06]

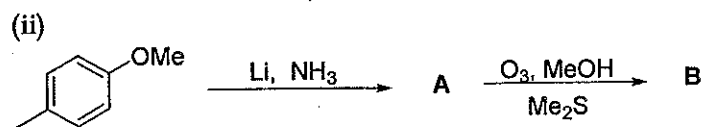
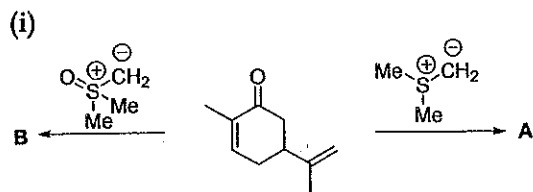


Q-4 [B] Explain the following reactions with suitable mechanisms. [06]
 (i) Noyori asymmetric hydrogenation.
 (ii) Ritter reaction

OR

Q-4 [B] Describe briefly. [06]
 (i) Homo-McMurry reaction. (ii) Nef reaction

Q-5 [A] Deduce the structure of A and B in following reaction. [06]



Q-5 [B] In Wittig reaction stabilized ylide gives E-alkene while non stabilized ylide gives Z-alkene. Explain. [06]

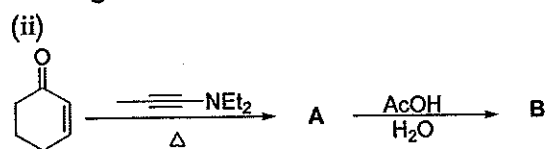
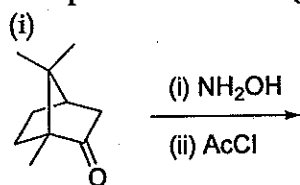
OR

Q-5 [B] Do as directed. [06]

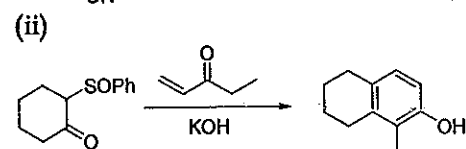
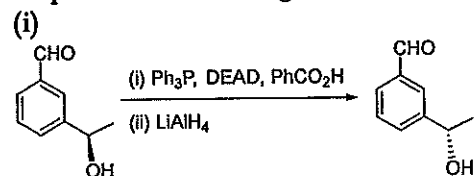
(i) Why special reagents have to be used to assist hydrolysis of dithiines? Describe at least two ways in which hydrolysis of dithiines is possible.

(ii) Julia olefination is stereoselective. Explain.

Q-6 [A] Complete the following reactions by giving suitable mechanism. [06]

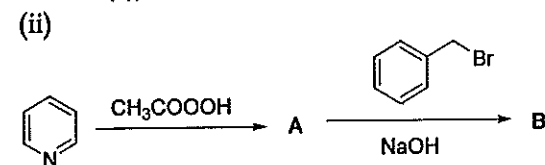
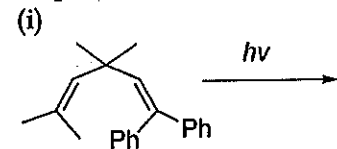


Q-6 [B] Explain the following transformations by giving suitable mechanism. [06]



OR

Q-6 [B] Explain the following reactions by giving suitable mechanism. [06]



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