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[ 40 / A-51 ]

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SARDAR PATEL UNIVERSITY  
 ORGANIC CHEMISTRY-II (PS02CCHE02)  
 M. Sc. (CHEMISTRY), SEMESTER –II EXAMINATION  
 Thursday, 7<sup>th</sup> April, 2016

Time : 10.30 am to 01.30 pm

Total Marks : 70

**Q.1 Select the correct answer from the options given below question.**

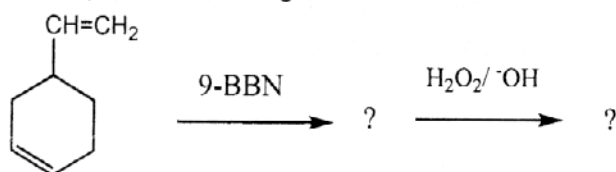
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- a) DCC is acts as \_\_\_\_\_  
 i) Decarbonylating agent                      ii) Reducing agent  
 iii) Dehydrating agent                      iv) Dehydrogenating agent
- b) In Schlosser modification, non stabilized ylide mainly gives----  
 i) Z-alkene      ii) E-alkene              iii) Cis alkene      iv) None
- c) Which of the following reaction is used for selective alkylation of aldehydes and ketones?  
 i) Robinson ring annulation    ii) Wittig reaction    iii) Stork enamine reaction    iv) None
- d)  $H_2N-NH_2 / ^-OH$  is used for following reduction.  
 i) Clemmenson reduction                      ii) Meerwein Ponderoff Verly reduction  
 iii) Wolff Kishner reduction                      iv) Cannizarro reduction
- e) The intermediate in Bomford-Steven's reaction when performed in aprotic solvent is a-----  
 i) Carbocation      ii) Carbanion              ii) Free radical              iv) Carbenoid
- f) Oxidation number of carbon -1 in propanoic acid is -----  
 i) +3                      ii) -3                      iii) +1                      iv) +2
- g) Which of the following hydroborating reagent is bifunctional hydroborating reagent.  
 i) Thexyl borane      ii) Catechol borane      iii) 9-BBN      iv) isopinocampheyl borane
- h) -----reagent is used in Criegee oxidation.  
 i)  $Pb(OAc)_4$               ii) HgO                      iii)  $SeO_2$               iv)  $HIO_4$

**Q.2 Answer the following questions. (Any seven)**

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- a) Why only secondary amine is used for enamine preparation?  
 b) Why Meerwein Ponderoff Verly reduction is faster than cannizaro reaction?  
 c) How will you prepare DCC ?  
 d) Define: i) Atom economy ii) E-factor  
 e) Complete the following reaction scheme.

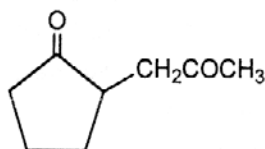
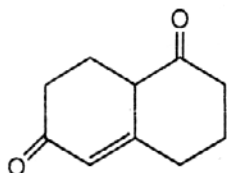


- f) How Peterson reaction differs from Wittig reaction.  
 g) What is the selectivity of  $KMnO_4$  as the reagent with varying conditions?  
 h) Give the mechanism for oxidation of benzylic alcohol using  $MnO_2$ .  
 i) How the use of microwave is better than conventional methods of heating?

Q. 3 A) Furnish the synthesis of following compounds by reaction mentioned against them. 06

i) Robinson ring annulation

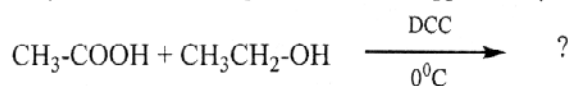
ii) Stork enamine reaction



B) Answer the following

i) Comment on stereochemical outcome of Wittig reaction using non-stabilized ylide. 03

ii) Complete the following reaction and suggest the probable mechanism for it. 03



OR

B) Answer the following.

i) Explain the Schlosser modification. 03

ii) Give the synthesis of methyl vinyl ketone using Mannich reaction. 03

Q.4 A) Answer the following.

i) How do terminal and non terminal alkynes differ in their reactivity towards hydroboration followed by alkaline  $\text{H}_2\text{O}_2$  oxidation. 03

ii) Discuss the mechanism of Shapiro reaction with proper evidences. 03

B) Answer the following.

i) Explain the dependency of Bamford-Stevens reaction on nature of solvents. 03

ii) What are the advantages of monofunctional and bifunctional hydroborating reagents over borane. 03

OR

B) Answer the following.

i) Suggest the synthesis of  $\text{Ph-CH=CH-CO-CH}_2\text{-CH}_3$  from formaldehyde using 1,3-dithiane. 03

ii) Give the preparation of cyclopentanol by carbonylation of organoboranes. 03

Q.5 A) Answer the following.

i) Outline the mechanism of Swern oxidation of alcohols 03

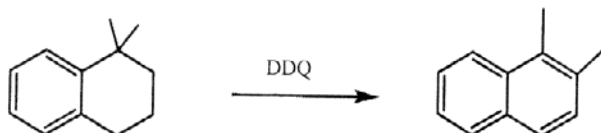
ii) Explain the hydroxylation of cis-2-butene using iodine/ silver benzoate under wet conditions. 03

B) Answer the following.

- i) Explain the reaction of mono and bis hydrazone of  $\alpha$ -diketones with HgO. 03
- ii) The Malaprade oxidation of 1 mole of compound gives 1 mole of glyoxalic acid, 3 mole of formic acid and 1 mole of formaldehyde . Suggest the structure of starting compound. 03

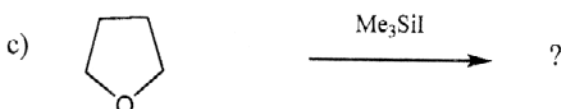
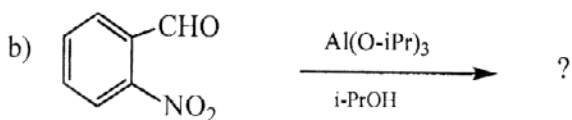
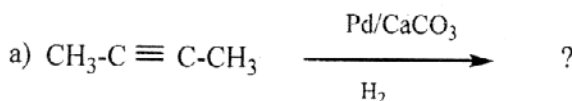
OR

- B) i) Explain diastereoselectivity observed in addition of PhMgBr to 3R-methyl-2-pentanone by using Cram's rule. 03
- ii) Explain the following transformation. 03



Q.6 Answer the following .

- A) Write a note on : i) Clemmenson reduction      ii) Birch reduction 06
- B) i) Discuss the mechanism of reduction of following compounds by LiAlH<sub>4</sub>. 03
- a) Ethyl acetate      b) Acetamide
- ii) Write the product of the following reactions. 03



OR

- B) i) The product formation of tributyl tin hydride reduction of haloalkenes depends on concentration of TBTH. Explain. 03
- ii) What are the advantages of phase transfer catalysts? Give the IUPAC name of following Crown ethers. 03
- a) Cyclo dihexyl 18-Crown -6      b) 12-Crown-4

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