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SARDAR PATEL UNIVERSITY
M. Sc. (CHEMISTRY), SEMESTER –II EXAMINATION
Tuesday, 25th October, 2016
ORGANIC CHEMISTRY-II (PS02CCHE02)

Time : 10.00 am to 01.00 pm

Total Marks : 70

Q.1 : Select the correct answer from the following multiple choice questions.

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- a) Dimethyl ether reacts with trimethylsilyliodide to give-----
i) ethyl iodide ii) methyl iodide iii) 1,2-diiodoethane iv) 1,1-diiodoethane
- b) α,β -unsaturated ketone upon Shapiro reaction gives-----
i) 1,3-diketone ii) 1,4-diketone iii) conjugated diene iv) 1,2-diketone
- c) Betain is an intermediate in -----
i) Robinson ring annulation ii) Wittig reaction iii) Stork enamine reaction iv) Mannich reaction
- d) Which of the following reagent is used for syn-hydroxylation?
i) Peracid ii) Lead acetate iii) Woodward reagent iv) Prevost reagent
- e) BH_3 is Lewis acid because-----
i) It can donate H^+ to alkene ii) It supplies H^+ to more substituted olefinic carbon
iii) It has vacant p-atomic orbital on boron iv) None
- f) $Zn-Hg / HCl$ is used for reduction of -----
i) Aldehydes and ketones ii) alkenes
iii) alkyl halides iv) alkynes
- g) IUPAC name of 15-crown-5 is-----
i) 1,4,7,10,13-pentaoxocycloheptadecane ii) 1,4,7,10,13-pentaoxocyclohexadecane
iii) 1,4,7,10,13-pentaoxocyclopentadecane iv) 1,4,7,10,13-pentaoxocyclooctadecane
- h) Which of the following reagent is used for allylic bromination.
i) MnO_2 ii) NBS iii) SeO_2 iv) HIO_4

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

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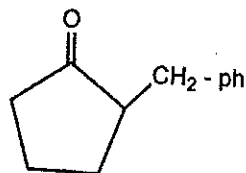
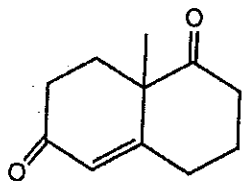
- a) Why primary amine are not preferred for enamine preparation?
- b) Why Wittig reaction should be performed under inert and dry condition?
- c) How does Shapiro reaction differ from Bamford-stevens reaction?
- d) How will you prepare disiamyl borane?
- e) Give the importance of Arbusov reaction in organic synthesis.
- f) Describe the reduction of 1^o and 2^o amides by $LiAlH_4$.
- g) List the advantages and limitations of Jones reagent?
- h) Calculate the oxidation no of carbon-1 in 1-propanol, propanal and propanoic acid.
- 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

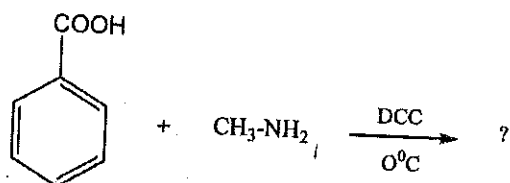
i) Robinson Ring Annulation

ii) Stork enamine reaction



B) Answer the following

- i) Why does stabilized ylide preferentially lead to the formation of E-alkene in Wittig reaction. 03
- ii) Complete the following reaction and suggest the probable mechanism for it. 03



OR

B) Answer the following.

- i) Show that Stork-enamine reaction is regioselective in its nature. 03
- ii) Give the synthesis of pent-1-ene-3-one using Mannich reaction. 03

Q.4 : A) Answer the following.

- i) Give the detailed mechanism of Shapiro reaction. 03
- ii) Discuss the importance of carbonylation of organoborane compounds. 03

B) Answer the following.

- i) Show that stereochemical outcome in Peterson olefination depends on reaction conditions. 03
- ii) Describe the importance of 1,3-dithiane in organic synthesis. What is the importance of Mozingo method of reduction. 03

OR

B) Answer the following.

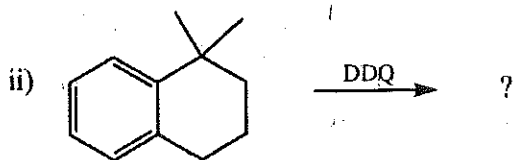
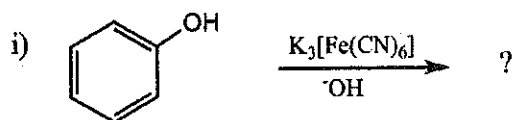
- i) How do terminal and non terminal alkynes differ in their reactivity towards hydroboration followed by alkaline H_2O_2 oxidation. 03
- ii) Discuss the mechanistic dependency of Bamford-Stevens reaction on nature of solvents. 03

Q.5 : A) Answer the following.

i) Explain the hydroxylation of trans-2-butene using iodine/ silver benzoate under dry condition. 03

ii) What are the characteristics of good oxidizing agent. 03

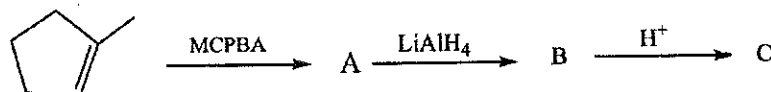
B) Write the product of the following reactions and suggest the mechanism. 06



OR

B) i) Describe the basic differences between reactivity of Gilman and Grignard reagents towards α, β -unsaturated aldehydes with proper example. 03

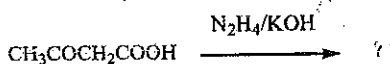
ii) Explain the following transformation. 03



Q.6 : A) Answer the following .

i) How do LiAlH_4 and NaBH_4 differ in their reactivity? Explain with suitable example. 03

ii) Predict the product of the following reaction with appropriate mechanism. 03



B) Write a note on :

- i) Meerwein- Ponderoff-Verly reduction
- ii) Birch reduction

OR

B) Answer the following

- i) What are the advantages of phase transfer catalysts? Give the synthesis of 18-crown-6. 03
- ii) The product formation of tributyl tin hydride reduction of haloalkenes depends on concentration of TBTH. Explain. 03

