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41263

B. Sc. (Hons.) Chemistry 4th Semester Examination – May, 2019

ORGANIC CHEMISTRY

Paper : CH(H)-403

Time : Three hours] ***[Maximum Marks : 40***

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt ***five*** questions in all, selecting ***one*** question from each Section. Question Number 1 is ***compulsory***. All questions carry equal marks.

1. ***Compulsory Question*** : $8 \times 1 = 8$

(a) Write down the wavelength range of IR radiation in μ.

(b) Write an expression to determine the basic strength of amine and correlate it with $_pK_b$ value.

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(c) Explain why ammonia is less basic than primary aliphatic amine ?

(d) Reduce the nitro methane in neutral medium.

(e) Explain how two isomers are produced when phenyl nitro methane is treated with base ?

(f) Why temperatures in diazotization reactions keep low ?

(g) What are α, β-unsaturated carbonyl compounds ?

(h) Write a very short note on umpolung.

SECTION – A

2. (a) How will you prepare a solid sample for IR ? 4

(b) Discuss about the fundamental stretching vibration frequencies. 4

3. (a) Write a short notes on : 4

(i) Functional group region

(ii) Finger print region

(iii) Aromatic region

(iv) % Transmittance

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(b) Discuss the IR spectrum of 2-methyl-2-propanol.

SECTION – B

4. (a) Discuss about the stereochemistry of tertiary amines. Why tertiary amine isomers have not been isolated so far ?

(b) How would you explain the property of quaternary ammonium salts as phase transfer catalyst ?

5. (a) Why primary amines give obnoxious smell when heated with chloroform and alcoholic potash ? Explain.

(b) Why electrophilic reactions are not given by aliphatic amines but aromatic amines do ? Explain with examples. 4

SECTION – C

6. (a) How will you replace aza group by NO_2 group ? Starting with aromatic amine, explain all the steps involved. 4

(b) Convert aniline into hydrazine. 4

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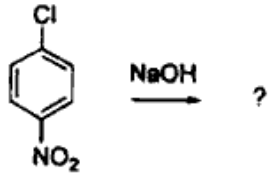
7. (a) Explain the product with mechanism : 4



(b) Compare the products formed when reduction of nitrobenzene is carried out in acidic and neutral medium. 4

SECTION – D

Give the mechanism of : $4 \times 2 = 8$

(i) Meerwein-Pondorf-Verley reduction

(ii) Wolf-Kishner reduction

(a) How will you distinguish between aliphatic and aromatic aldehydes ? Explain with reasons. 4

(b) Illustrate with suitable example of Aldol condensation. 4

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