



22-3-2018

DOON UNIVERSITY, DEHRADUN
Mid Semester Examination, Sixth Semester, 2018
Academic Year 2017-18 (Even Semester)
School of Physical Sciences, Department of Chemistry
Programme Name: Integrated M.Sc. Chemistry, 6th Semester
Course Code with Title: **CYC-252** **Org. Chem. III: Heterocyclic Chemistry**

Time Allowed 2.00 Hours

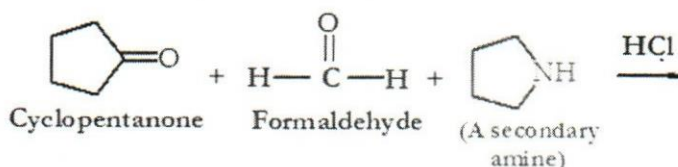
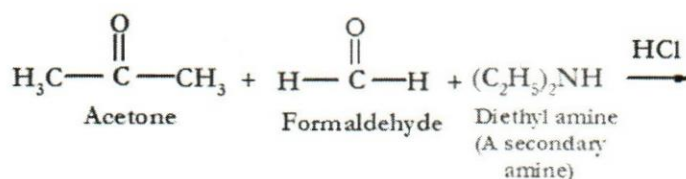
Maximum Marks: 30

Date: 22-03-2018

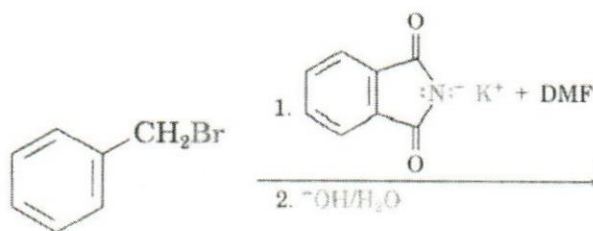
SECTION : A

(Very Short Answer Type Questions)

- [1] Write a short note on solubility of alkyl cyanides. [1]
- [2] Write a short note on chirality of amines. [1]
- [3] Draw the structural formulae for the major product in following two reactions: [1]



- [4] Explain why 3° amines have lower b.p. and m.p. than those of 1° and 2° amines. [1]
- [5] Match the boiling points 65° C, -6° C and -88° C with the compounds CH₃CH₃, CH₃NH₂ and CH₃OH. Explain your answer briefly. [1]
- [6] (a) Write a very short note on Hinsberg Reagent Test. [1/2]
- (b) What is the name and structure of amine formed in the following reaction? [1/2]

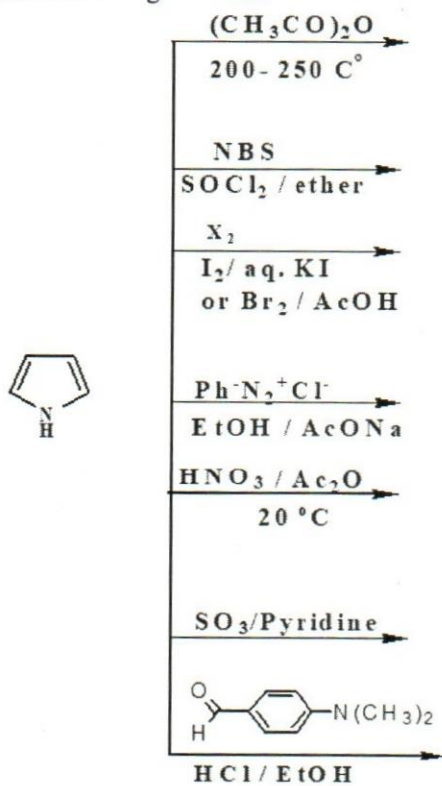


Benzyl bromide

SECTION : B

(Short Answer Type Questions)

- [7] (a) Explain the reason behind high stability of benzene diazonium salts. Also explain the reason behind high utility of benzene diazonium salts in organic syntheses. [2]
 (b) Write three examples of Sandmeyer Reactions with chemical reactions. [1]
- [8] (a) Write the order of grading of aromaticity among pyrrole, furan and thiophene. Also explain the reason. [1]
 (b) Write notes on: (i) Gabriel Phthalimide Synthesis, (ii) Hoffman and Curtius Rearrangements. [2]
- [9] Describe Hofmann Exhaustive Methylation and Hoffman Elimination in detail. Also explain why Ag_2O is used in elimination step. Describe the orientation in Hoffman Elimination. [3]
- [10] (a) Write short note on dipole moment and basicity of pyrrole and its saturated analog. [1]
 (b) Write the products in following reactions: [2]



SECTION : C

(Long Answer Type Questions)

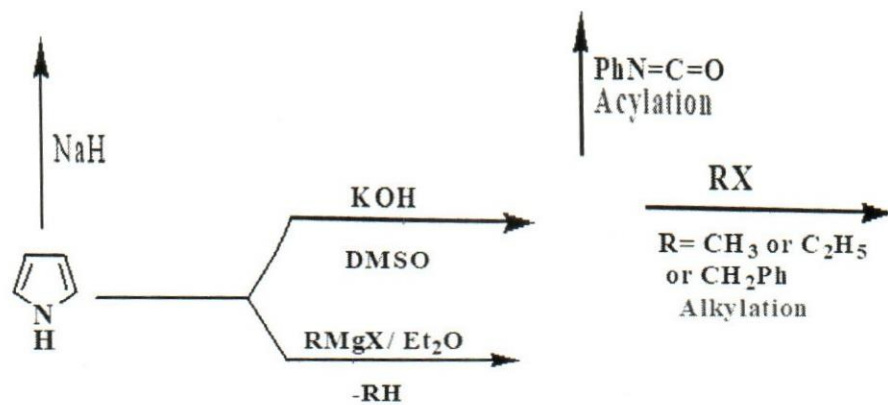
[11] Write notes on;

[1+1+2+1+1]

(a) Paal-Knorr Synthesis,

(b) Knorr-pyrrole synthesis

(c) Formation of Products in the following image:



(d) Cycloaddition reactions of pyrrole

(e) Orientation of Electrophilic Substitution Reactions in Pyrrole

[12] (a) Why is pyridine much less reactive towards electrophiles than pyrrole and benzene? [1]

(b) Write details about following chemical reactions: [1+1+1+2]

(i) Fischer Indole Synthesis

(ii) Madelung Synthesis

(iii) Skraup's Synthesis

(iv) Knorr Quinoline Syntheses