

This question paper contains 4+2 printed pages]

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S. No. of Question Paper : 1618

Unique Paper Code : 217403

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Name of the Paper : ORGANIC CHEMISTRY-III (CHHT-409)

Name of the Course : B.Sc. (Hons.) CHEMISTRY

Semester : IV

Duration : 3 Hours

Maximum Marks : 75

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt six questions in all. Question No. 1 is compulsory and carries 15 marks. All other questions are of 12 marks each.

1. (a) Piperidine on exhaustive methylation followed by heating with AgOH gives a compound A which on repeating the same process gives a compound B(C₅H₈) which isomerises into another compound C. Identify A, B, C and write the reactions involved.
- (b) Give a suitable explanation for the following :
- (i) Pyridine is a weaker base than piperidine.

P.T.O.

(ii) Pyrrole gets polymerised in acidic medium.

(iii) Diazo coupling takes place in either mild alkaline or mild acidic conditions. 6,9

2. (a) Nitration of naphthalene occurs at 1-position and not at 2-position.

Explain with the help of mechanism of the reaction.

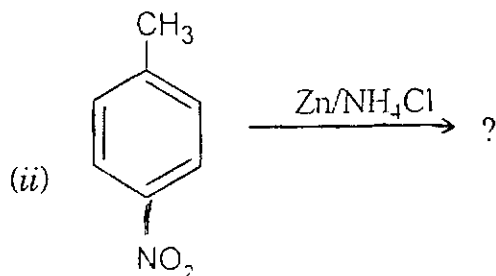
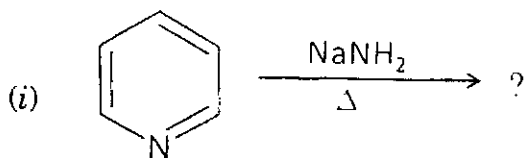
(b) How naphthalene can be converted into :

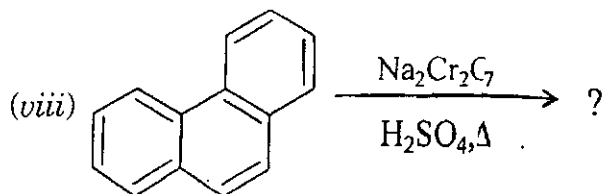
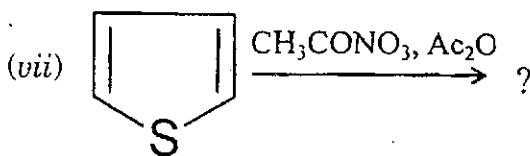
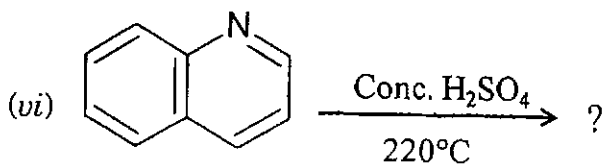
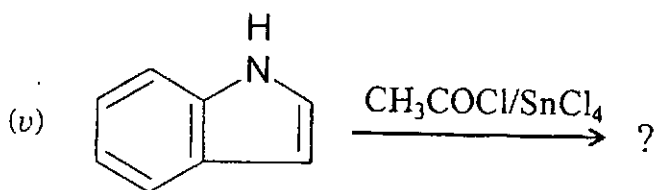
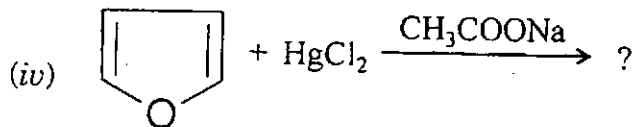
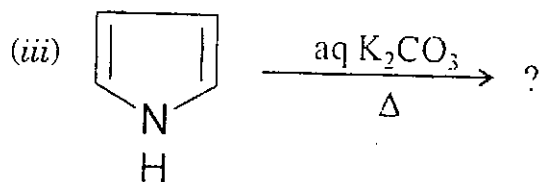
(i) 2-Naphthylamine;

(ii) 1-Naphthol ?

(c) Describe the Haworth synthesis of phenanthrene. 4,4,4

3. (a) Complete the following reactions :





- (b) Why does anthracene undergo electrophilic substitution at C-9 in preference to C-1 position ? Explain with the help of resonating structures of intermediate. 8,4
4. Carry out the following conversions using the necessary reagents :
- (i) Benzene into 1, 3, 5-tribromobenzene;
 - (ii) Nitrobenzene into 4-iodonitrobenzene;
 - (iii) Phenylhydrazine into indole;
 - (iv) *o*-Bromobenzyl bromide into anthracene. 3,3,3,3
5. Explain the following :
- (a) Pyridine acts like a deactivated benzene ring and electrophilic substitution occurs at 3-position.
 - (b) Aromatic character of furan on the basis of resonance.
 - (c) Formation of 3-chloroquinoline when indole is heated with CHCl_3 in presence of KOH. 4,4,4

6. Write the products formed in the following reactions and give the mechanism involved :

(a) Propanamide is treated with bromine and aqueous NaOH.

(b) Methyl cyanide is treated with ethyl magnesium bromide followed by hydrolysis.

(c) Furfural is treated with acetic anhydride in presence of sodium acetate. 4,4,4

7. (a) Write a test along with the equations involved to distinguish ethyl amine from :

(i) dimethyl amine and

(ii) aniline.

(b) Discuss the reactions which indicate the position of linkage between pyridine and N-methylpyrrolidine in nicotine. 6,6

8. Write short notes on any *three* of the following :

(a) Madelung synthesis of 2-substituted indole derivatives;

(b) Pomeranz-Fritsch synthesis of isoquinoline;

(c) Hantsch synthesis for pyrrole derivatives;

(d) Gabriel phthalimide synthesis.

4,4,4