

CHE-6

BACHELOR OF SCIENCE (B.Sc.)

Term-End Examination

June, 2005

CHEMISTRY

CHE-6 : ORGANIC REACTION MECHANISM

Time : 2 hours

Maximum Marks : 50

Note : Attempt any **four** questions. All questions carry equal marks.

1. (a) Why does methylbromide undergo substitution reaction with sodium hydroxide faster than ethyl bromide ? 2
- (b) What is meant by intramolecular nucleophilic substitution ? Explain it by taking the example of 4-bromobutanol. 4
- (c) Which of the following shows aromatic character and why ? Draw its resonating structures. 4



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P.T.O.

- (d) Write the structure of the product formed when aniline reacts with bromine water. Give its IUPAC name also. 2 $\frac{1}{2}$
2. (a) Predict the products of reaction of hydrogen bromide and 3,3-dimethyl but-1-ene with the help of a suitable mechanism. 4
- (b) Why does chlorofumaric acid undergo elimination 50 times faster than chloromaleic acid? Write the product of elimination. 2
- (c) A, B and C are isomeric heptenes. On ozonolysis, A gives ethanal and pentanal, B gives propanone and butanone and C gives ethanal and 3-pentanone. Give structural formula of A, B and C. 4 $\frac{1}{2}$
- (d) Write the reaction involved in the reduction of 2-butyne with sodium metal and liquid ammonia. Specify the isomer formed. 2
3. (a) Discuss any **two** of the following reactions giving mechanism : 7
- (i) Wittig reaction
- (ii) Perkin reaction
- (iii) Cannizzaro reaction
- (b) Why is photoinduced (4+2) cycloaddition symmetry forbidden? 3

(c) Triphenylmethyl radical is stabilised due to extensive delocalisation. Justify your answer with the help of resonating structures.

$2\frac{1}{2}$

4. (a) How will you carry out any **one** of the following conversions ? Write its mechanism also.

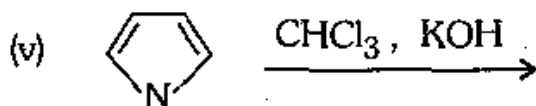
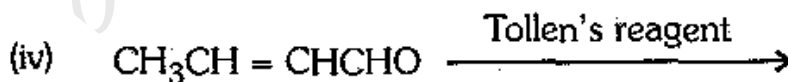
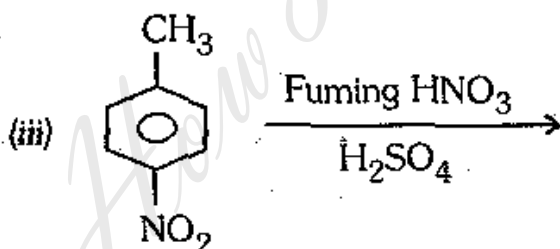
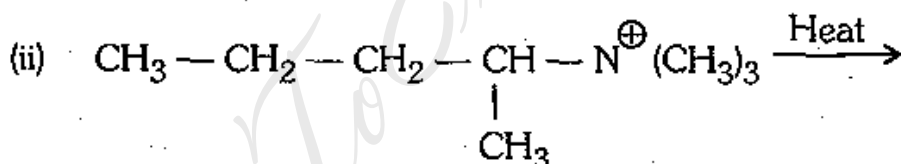
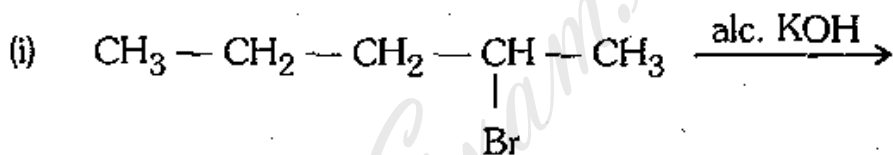
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(i) Diphenyl ketone to N-Phenylbenzamide

(ii) Benzamide to Aniline

(b) State the product for any **three** of the following reactions :

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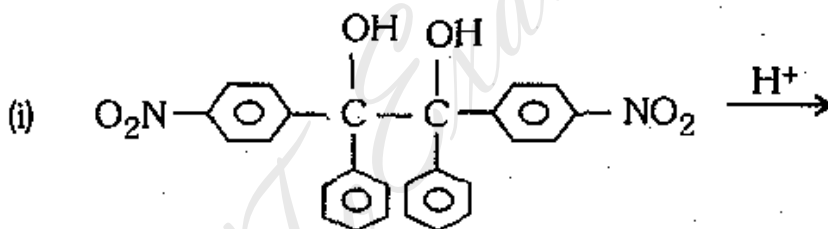


(c) Explain the terms, thermodynamic control and kinetic control. Illustrate with the help of an example in each case. 4

(d) What are benzyne? Write the mechanism of a reaction involving the formation of benzyne intermediate. $2\frac{1}{2}$

5. (a) Iodide ion is a good nucleophile but a weak base. Explain. 2

(b) Predict the product of the following reactions with a suitable mechanism. Give the name of the reactions also. 6



(c) What is the product of photoisomerisation of fumaric acid? $1\frac{1}{2}$

(d) A mixture of 3-chlorobut-1-ene and 1-chlorobut-2-ene is obtained during the photochemical chlorination of but-2-ene. Explain the reaction with the help of mechanism involved. 3

6. (a) What are azo dyes ? Draw the structure of any one azo dye. 2
- (b) What are analgesics ? Draw the structure of any one analgesic. 2
- (c) How is soap manufactured ? Why are soaps not effective as cleansers when used in hard water ? 4
- (d) Name the monomer in Nylon 6 and Nylon 6, 6. 2
- (e) How will you prepare a dicarboxylic acid from diethylmalonate ? $2\frac{1}{2}$