

2023

Chemistry (H)

B.Sc. First Semester End Examination - 2023

PAPER - MJ-1T (Unit-II)

Full Marks :

Time : hours

*The figures in the right-hand margin indicate marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

*Illustrate the answers wherever necessary.*

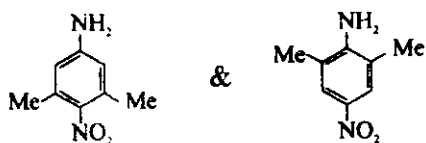
**Group - A**

**1. Answer any two questions**

(a) Squaric acid is almost as strong as sulphuric acid. -

Explain. 2

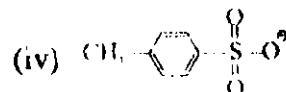
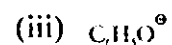
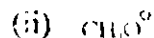
(b) Compare the basicity of the following compounds. 2



*(Turn Over)*

( 2 )

(c) Arrange the following anions in order of increasing nucleophilicity. Give reason. 2



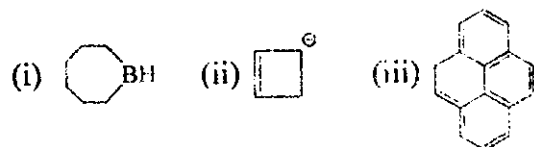
**Group - B**

2. Answer any two questions.

(a) Draw all the  $\pi$  molecular orbitals of allylation, allyl anion and allyl radical.

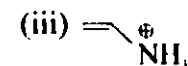
Arrange them in order of increasing energy level. Identify HOMO & LUMO in each case. 3

(b) Identify the following compounds as aromatic, antiaromatic and non aromatic. and why? (any two) 2



3. (a) Draw the orbital pictures of the following species indicating state of hybridisation of each of carbon & Nitrogen atoms (any two)  $(1\frac{1}{2}+1\frac{1}{2})=3$

( 3 )



(b) 1,2 dichloro ethane has very low dipole moment whereas 1,2 ethanediol has considerable dipole moment. -Explain. 2

4. (a) What is homoaromaticity? Explain with a example. 2

(b) Write down the canonical forms of diazomethane and indicate which one is most contributing among them. 3