

Roll No. :

Total No. of Questions : 11]

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BPMS-510

M.Sc. (Previous) Examination, 2023

CHEMISTRY

Paper - II

(CH-402)

(Organic Chemistry)

Time : 3 Hours]

[Maximum Marks : 75

Section-A

(Marks : 2 × 10 = 20)

Note :- Answer all *ten* questions (Answer limit 50 words). Each question carries 2 marks.

Section-B

(Marks : 5 × 5 = 25)

Note :- Answer all *five* questions. Each question has internal choice (Answer limit 200 words). Each question carries 5 marks.

Section-C

(Marks : 10 × 3 = 30)

Note :- Answer any *three* questions out of five (Answer limit 500 words). Each question carries 10 marks.

Section-A

- (i) What is different between aromaticity and anti-aromaticity ?
- (ii) Explain the chirality in glucose.

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- (iii) Explain the field effects on reactivity.
- (iv) What is non-classical carbocation ?
- (v) Explain the leaving group in electrophilic substitution reaction.
- (vi) Explain the reactivity of benzyne.
- (vii) Explain the hydroboration.
- (viii) Explain the stereochemistry of metal hydride reduction.
- (ix) Give the elimination reaction in meso 1, 2-dibromo-1, 2 diphenylethane.
- (x) Explain the FMO method in electrocyclic reactions.

Section-B

2. Explain the aromaticity in benzenoid and non-benzenoid compounds with examples.

Or

Explain the stereoselective reaction in cyclocompounds.

3. Write a short note on Hammonds postulates.

Or

Explain the neighbouring group Participation in SN^2 reaction.

4. Describe the effect of substrates and solvent polarity on the reactivity in SE^2 reactions.

Or

Describe the NBS oxidation.

5. Explain the hydrogenation of alkenes and alkanes with examples.

Or

Explain the addition of nucleophiles to carbon-heteromultiple bonds.

6. Describe the Stereochemistry of E_2 -anti elimination reactions.

Or

Explain the suprafacial processes in pericyclic reactions.

Section-C

7. (a) Write short notes on cyclodextrins and rotaxanes.

(b) Explain the stereochemistry of Nitrogen and Phosphorus containing compounds. 5+5=10

8. (a) Explain the kinetic and thermodynamic control reactions.

(b) Taft equation.

(c) Application of NMR spectroscopy in the detection of carbocations. $3\frac{1}{2}+3\frac{1}{2}+3=10$

9. Describe the reaction mechanism of the following name reactions :

(a) Gattermann-Koch reaction

(b) Vilsmeier reaction

(c) Von Richter reaction

(d) Sommelet-Hauser reaction $2\frac{1}{2}\times 4=10$

10. Describe the mechanism of the following reactions :

(a) Condensation reactions

(b) Hydrolysis of esters

(c) Coupling of arylation

(d) Diazonium coupling $2\frac{1}{2}\times 4=10$

11. Explain the elimination reaction in alicyclic systems in detail. 10