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PA—05—2024

FACULTY OF SCIENCE

B.Sc. (First Year) (First Semester) EXAMINATION

APRIL/MAY, 2024

(CBCS/New Course)

CHEMISTRY

Paper-I

(Organic and Inorganic Chemistry)

(Saturday, 6-4-2024)

Time : 10.00 a.m. to 12.00 noon

Time—2 Hours

Maximum Marks—40

N.B. :— Attempt all questions.

1. Solve any *three* of the following : 3×5=15
- (a) Define *p*-block elements. Write their general characteristics.
- (b) (i) What are noble gases ? Explain clathrate compounds of noble gases.
- (ii) Explain structure of XeF_4 .
- (c) Give factors affecting on ionisation energy. Discuss variation of ionisation energy along a period and in a group.
- (d) What is electronegativity ? Discuss factors affecting on it.
- (e) Write *two* preparation methods and any *three* properties of XeF_2 .

P.T.O.

2. Attempt any *three* of the following :

3×5=15

(a) Define the following terms :

- (i) Substrate
- (ii) Reagent
- (iii) Carbocation
- (iv) Carbene
- (v) Carbanion.

(b) How will you prepare :

- (i) Alkane by hydrolysis of Grignard reagent
- (ii) Alkane by Kolbe synthesis
- (iii) 1-Butene from 1-Butyne
- (iv) 2-Butene from 2-Butanol
- (v) Ethyne from Iodoform.

(c) What is free radical ? Give its structure and stability.

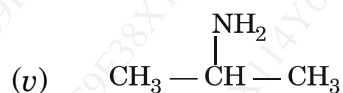
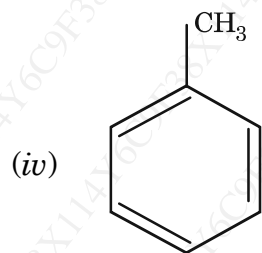
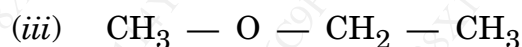
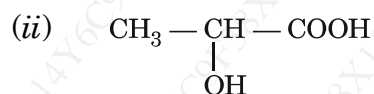
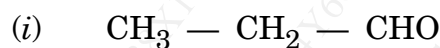
(d) What are alkanes ? Explain pyrolysis reaction with mechanism.

(e) Explain mesomeric effect in Aniline and Nitrobenzene.

3. Solve any *two* of the following :

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(a) Give the IUPAC names of the following :



(b) What are Cycloalkenes ? How will you prepare Cyclohexene from Cyclohexanol and Bromocyclohexane.

(c) Draw the structures of the following compounds :

(i) 2, 4 Dimethyl pentane

(ii) 2-Bromo propane

(iii) 3-Pentanone

(iv) Aniline

(v) Ethanoyl chloride.

P.T.O.

(d) What is the action of the following on 1, 3 Butadiene :

(i) Br_2

(ii) HBr

(iii) $\text{CH}_2 = \text{CH}_2$.