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NA—05—2023

FACULTY OF SCIENCE AND TECHNOLOGY

B.Sc. (First Semester) EXAMINATION

NOVEMBER/DECEMBER, 2023

(CBCS/New)

CHEMISTRY

Paper-I

(Organic and Inorganic Chemistry)

(Monday, 4-12-2023) **Time : 10.00 a.m. to 12.00 noon**

Time—2 *Hours* *Maximum Marks*—40

N.B. :— (*i*) Attempt *all* questions.

(*ii*) Figures to the right indicate full marks.

(*iii*) *All* questions carry equal marks.

1. Solve any *three* out of five : 3×5=15

(*a*) Write a note on general characteristics of *s*-block elements.

(*b*) Explain any *two* factors affecting on ionisation energy.

(*c*) Write a note on Paulling's method.

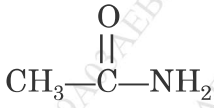
(*d*) Explain electronic configuration of noble gases.

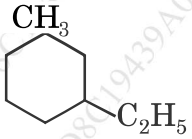
(*e*) Explain any *two* preparations of XeF_2 (xenon difluoride) and explain the structure of XeF_2.

P.T.O.

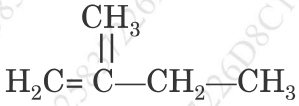
2. Solve any *three* of out of five : 3×5=15

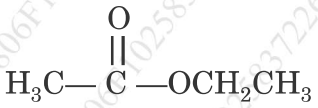
(*a*) Write the IUPAC name of the following compounds :

(*i*) 

(*ii*) 

(*iii*) CH_3CN

(*iv*) 

(*v*) 

(*b*) Distinguish between electrophiles and nucleophiles.

(*c*) Give the mechanism of addition of bromine to ethylene.

(*d*) Explain inductive effect with a suitable example.

(*e*) Give the IUPAC names of the following compounds :

(*i*) CH_3CH_2OH

(*ii*) CH_3CHO

(*iii*) CH_3COOH

(*iv*) $CH_3CH_2OCH_3$

(*v*) CH_3Br.

3. Solve any *two* of the following : 2×5=10

(*a*) How will you prepare acetylene from :

(*i*) Iodoform

(*ii*) Calcium carbide.

(*b*) Discuss ring opening reaction of cyclopropane with H_2 & HI.

(*c*) How will you prepare 1, 3-butadiene from :

(*i*) $CH_2(Br)—CH_2—CH_2—CH_2(Br)$

(*ii*) $H_2C(OH)—CH_2—CH_2—CH_2(OH)$

(*d*) Explain mesomeric effect in detail.