

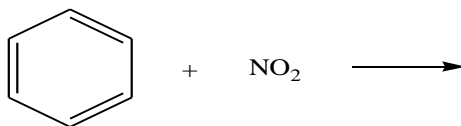
B.Sc. DEGREE END SEMESTER EXAMINATION - OCTOBER/NOVEMBER 2018**SEMESTER - 3: CHEMISTRY (CORE COURSE)****COURSE – U3RCHE3: FUNDAMENTALS OF ORGANIC CHEMISTRY***(For Supplementary - 2014 admission)*

Time: Three Hours

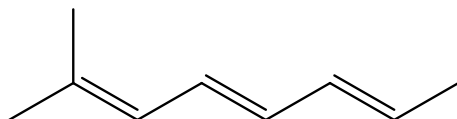
Max. Marks: 60

SECTION A*Answer all questions, each question carries 1 mark*

- Which of the following compound is optically active?
a) Butan-1-ol b) Butan-1-al c) Butan-2-ol d) 2-methyl propan-2-ol
- Among the following which is having highest electron affinity?
a) Fluorine b) Chlorine c) Bromine d) Iodine
- Delocalisation of electrons by the overlap of a σ bond orbital with a π or p orbital is called
- Friedel- Crafts reaction of benzene with ethyl chloride yields
- Write the major product of the following E_2 reaction
 $\text{CH}_3\text{-C}(\text{CH}_3)(\text{Br})\text{-CH}_2\text{-CH}_3 + \text{OH}^- \rightarrow \dots\dots\dots$
- Write the structure of σ complex in the following reaction



- There arestereo isomers in



- What fraction of a wood will remain after 11540 yrs., if the half-life period of C^{14} is 5770 yrs.?

(1 x 8 = 8)**SECTION B***Answer any six questions, each question carries 2 marks*

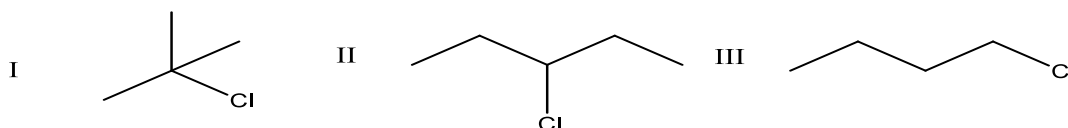
- The SN_1 reactivity of the following halides will be in the order
i) $(\text{CH}_3)_3\text{-C-Br}$ ii) $(\text{C}_6\text{H}_5)_2\text{-CH-Br}$ iii) $(\text{C}_6\text{H}_5)_2\text{-C}(\text{CH}_3)(\text{Br})$ iv) $(\text{CH}_3)_2\text{-CH-Br}$
v) $\text{C}_2\text{H}_5\text{Br}$ Also write their respective carbonium ions.
- Explain why cations are smaller than their parent atoms.
- Distinguish between conformation & configuration.
- What is packing fraction?
- What are carbenes? Give two examples.

14. In the reaction sequence, predict X & Y.



15. p-Xylene on nitration gives A, which on further nitration gives 3 products B, C & D. Write the structures of A, B, C & D.

16. In the following halogen compounds, which compound undergoes fastest $\text{S}_\text{N}1$ reaction?



(2 x 6 = 12)

SECTION C

Answer **any four** questions, each question carries **5** marks

- Discuss the relative stability of the conformations of methyl cyclohexane.
- Explain the stability of cyclopentadienyl anion.
- Discuss Pauling's scale of electronegativity.
- Briefly explain different types of pericyclic reactions with examples.
- How many stereo isomers are there with the formula $\text{CHO-CHOH-CHOH-CH}_2\text{OH}$? Identify the enantiomers in these isomers.
- Differentiate between inter-molecular and intra-molecular hydrogen bonding with examples.

(5 x 4 = 20)

SECTION D

Answer **any two** questions, each question carries **10** marks

- Write the structures of the conformations of butane. Discuss their relative stability.
- Explain the terms racemization and resolution of different racemic mixtures. Discuss various methods for resolution.
- Discuss the geometrical isomerism in alkenes taking an example. Also discuss E-Z system of notations.
- (a) What is meant by VSEPR theory? List its various postulates.
(b) Explain the shape of PCl_5 molecule. Do you expect all P-Cl bond lengths to be equal?

(10 x 2 = 20)
