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P P SAVANI UNIVERSITY

Second Semester of B.Sc. Examination
December- 2021
SSCH1060–Organic Chemistry - I

28.12.2021, Tuesday **Time: 09:00 a.m. to 11:30 a.m.** **Maximum Marks: 60**

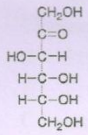
Instructions:
1. The question paper comprises of two sections.
2. Make suitable assumptions and draw neat figures wherever required.
3. Use of standard calculator is allowed.

Section-I (Total Marks - 30)

Q.1 Short Questions **[10]**

1.1 Objectives **[05]**

1.1a Following structure contain how many chiral carbon?



A 1
B 2
C 3
D 4

1.1b Permanent effect whereby polarity is induced on the carbon atom and the substituents attached to it due to minor displacement of bonding electron pair caused by their different electronegativity is known as _____

A Electromeric effect
B Mesomeric effect
C Inductive effect
D Hyperconjugation

1.1c Which of the following coal is rich source of aromatic compound?

A Peat
B Lignite
C Bituminous
D Anthracite

1.1d Catalytic hydrogenation of an alkene also known as _____

A Transition addition
B Cis addition
C Trans addition
D None of these

1.1e Which is not involve in the conversion of *cis* to *trans*?

A Heated to high temperature
B Absorb light
C Rotation
D None of these

1.1f The order of reactivity of halogen to substitute H-atom of alkane.

A $F_2>Cl_2>Br_2>I_2$

B $F_2<Cl_2<Br_2<I_2$

C $Cl_2>Br_2>I_2>F_2$

D $Cl_2<Br_2<I_2<F_2$

1.1g In Wurtz reaction, alkyl halides are react with _____ metal to produce alkanes.

A Mg

B Na

C K

D Al

1.1h Hexane has _____ structural isomer.

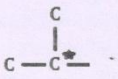
A 1

B 3

C 5

D 7

1.1i Carbon having * is _____Carbon.



A 1^0

B 2^0

C 3^0

D 4^0

1.1j What is the general formula of alkanes?

A C_nH_{2n+2}

B C_nH_{2n}

C C_nH_{2n-2}

D C_nH_n

1.2 Answer the Following: (MCQ/Short Question/Fill in the Blanks) **[05]**

1.2a What is saytzaff rule?

1.2b Give an examples of functional group which shows +I and –I effect.

1.2c What is Carbonization?

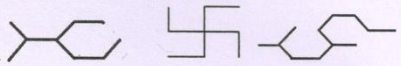
1.2d Give alkylation of acetylene.

1.2e What is hydroboration?

Q.2 Short Notes (Attempt any two) **[06]**

A How will you prepare aromatic compound by high temperature cracking and polymerization?

B Give IUPAC nomenclature of following:



C Compare Electromeric effect and Inductive effect.

Q.3 Explain in detail (Attempt any two) **[14]**

A What is pyrolysis? How will you convert ethane to ethylene via pyrolysis with mechanism?

B Electrophilic substitution reaction of Benzene.

C Write only reaction of product when 1-butene reaction with following reagent.
(i) $H_2O/H+$ Heat (ii) Br_2/R_2O_2(iii) Br_2/CCl_4 (iv) HOBr (v) O_3, Zn/H_2O (vi) HBr.

Section-II (Total Marks - 30)

Q.1 Short Questions [10]

1.1 Objectives [05]

1.1a Cis and trans are _____.

A Constitutional isomer
B Geometrical isomer
C Distereomers
D Enantiomers

1.1b Which one is the neucleophile?

A SO_3
B BF_3
C ROH
D $AlCl_3$

1.1c Cumene is synthesize from benzene and _____.

A Ethylene
B Propylene
C Isobutylene
D Butylene

1.1d Hydrohalogenation of a symmetrical alkene follows a _____ mechanism.

A Carbonium ion
B Carbanion
C Free radical
D Carbene

1.1e Which alcohols are dehydrated very fast to produce alkenes?

A 1^0
B 2^0
C 3^0
D None of these

1.1f A molecule of the product and also a free radical to continue the reaction, these are called _____ steps.

A Initiation
B Chain propagation
C Termination
D Inhibition

1.1g _____ discharge at the cathode in Kolbe's method.

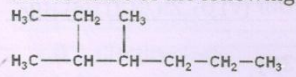
A Acetate ion
B Sodium ions
C Sodium acetate
D Acetate free redical

1.1h Oxygenated compounds like aldehydes, ketones, alcohols and carboxylic acids are reduce to corresponding alkanes by reaction with _____.

A HF + P
B HCl + P
C HBr + P

D HI + P

1.1i IUPAC name of the following compound.



A 2-ethyl-3-methylhexane

B 5-ethyl-4-methylhexane

C 3,4-dimethylheptane

D 4,5-dimethylheptane

1.1j Alkanes as possess a one-carbon branch on the _____ carbon of the normal or basic chain, are referred to as iso hydrocarbons.

A First

B Second

C Third

D Forth

1.2 **Answer the Following: (MCQ/Short Question/Fill in the Blanks)** **[05]**

1.2a Give list of electrophilic substitution reaction.

1.2b Give free radical halogenation of alkane. (Only reaction)

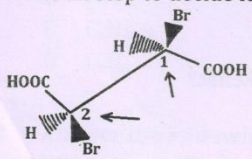
1.2c Give classification of Isomers.

1.2d Give list of electron displacement effect.

1.2e What is conjugative effect?

Q.2 **Short Notes (Attempt any two)** **[06]**

A Give R and S notation to Carbon-1 and Carbon-2 in the following molecule. Write all step to decide it.



B Give preparation of 1,3-butadiene.

C Give difference between Diastereomer and Enantiomer.

Q.3 **Explain in detail (Attempt any two)** **[14]**

A What are electrophiles and Nucleophiles? Give their types and examples.

B Explain SN^2 mechanism for methyl bromide.

C Explain Z and E isomer with suitable examples.