QP Code: R262G002 | Reg. No | | | | | | | | | | | AY 25

Gandhi Institute of Engineering and Technology University, Odisha, Gunupur
(GIET UNIVERSITY)

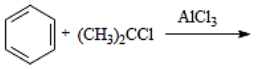
M.Sc. (Second Semester – Regular/Supplementary) Examinations, May – 2026

24MCYPC12001 – Organic Chemistry-II
Chemistry

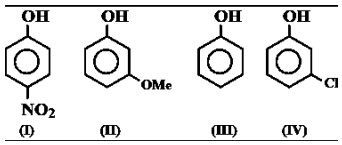
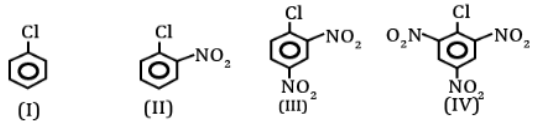
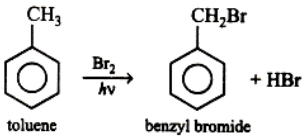
Time: 3 hrs | Maximum: 60 Marks

Answer ALL questions
(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

Q.1. Answer ***ALL*** questions		CO #	Blooms Level
a.	Complete the reaction 	CO1	K2
b.	What are classical and non-classical free radicals. Give examples of each.	CO2	K2
c.	Write one evidence in support of aromatic nucleophilic substitution.	CO3	K3
d.	CH_3-CH=CH_2 $\xrightarrow[R-O-O-R]{HBr}$?	CO5	K4
e.	What will be the product of the β-elimination of tertiary-butyl alcohol (2-methyl-2-propanol).	CO5	K4

PART – B **(10 x 5 = 50 Marks)**

Answer ***ALL*** the questions		Marks	CO #	Blooms Level
2. a.	Explain Arenium ion mechanism for electrophilic aromatic substitution with a sigma-complex diagram.	5	CO1	K2
b.	Explain the order of reactivity for the following molecules towards electrophilic aromatic substitution. 	5	CO1	K4
	(OR)			
c.	Explain the rate of aromatic nuleophilic substitution reaction of the following compounds 	5	CO1	K4
d.	Discuss the effect of substrate structure, nature of nucleophiles, solvent polarity and leaving group on the reactivity of electrophilic substitution in aliphatic compounds.	5	CO6	K2
3.a.	Elucidate the mechanism of free radical halogenation at a bridgehead carbon atom, using adamantane or norbornane.	5	CO2	K3
b.	Critically analyze the stability of bridgehead free radicals.	5	CO2	K3
	(OR)			
c.	Explain Neighbouring group assistance in free radical reaction.	5	CO2	K3
d.	Explain the Mechanism. 	5	CO2	K4
4.a.	Explain SRN1 mechanism of nucleophilic substitution reactions.	5	CO6	K2
b.	Differentiate between ArSN1 and ArSN2 mechanism.	5	CO3	K3
	(OR)			
c.	Explain nucleophilic substitution in Allylic systems and Vinylic systems	5	CO6	K3

d.	Explain in brief SN1 and SN2 reactions mechanism.	5	CO3	K3
5.a.	Find out the product with proper Mechanism CH3-CH=CH2 $\xrightarrow[3.BH3]{1.THF\ 2.H2O2/OH-}$ →	5	CO6	K4
b.	Describe the oxymercuration–demercuration reaction.	5	CO4	K2
	(OR)			
c.	Propose the Mechanism. $CH_3\text{-}CH{=}CH_2 \xrightarrow{C_6H_5C\text{-}0\text{-}0\text{-}0\text{-}H}$	5	CO4	K4
d.	Write a short notes of sharpless asymmetric epoxidation.	5	CO4	K3
6.a.	Explain Saytzeff and Hofmann Elimination with suitable example.	5	CO5	K2
b.	Describe the mechanism of pyrolytic elimination (Ei mechanism). Discuss its stereochemistry and orientation of the double bond with suitable examples	5	CO5	K3
	(OR)			
c.	Explain E2, E1, E1CB elimination reaction.	5	CO5	K2
d.	State and explain Bredt's rule. with suitable example	5	CO5	K2

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