Name:

Enrolment No:

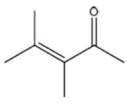
UPES
UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2021

Course: B.Sc.(H) Chemistry | **Semester: VI**
Program: Organic chemistry-V | **Time: 03 hrs.**
Course Code: CHEM 3004 | **Max. Marks: 100**

SECTION A

Attempt all the questions

S. No.			Marks	CO
Q 1	A	Explain what happens when Glucose is treated with Bromine water	2	[5] CO3
	B	Distinguish between glucose and sucrose	2	
	C	Write the generic formula of Carbohydrates.	1	
Q 2	A	Write the monomers of a) Nylon 6,6, b) Natural Rubber	2	[5] CO1
	B	Explain why the elemental composition of polymers is same to the monomer in case of addition Polymerization	2	
	C	Give examples of Biodegradable Polymers	1	
Q 3	A	State the number of sets of equivalent hydrogens in *m*-xylene in its NMR spectrum and give appropriate reason A) 1 B) 2 C) 3 D) 4	2	[5] CO2
	B	A compound shows strong, very broad IR absorption in the region from 3200 to 3500 cm^{-1} and strong absorption at 1715 cm^{-1}. Which ***<u>two</u>*** functional groups account for these absorptions? A) –OH B) –C=C C) –COR D) –C=O	2	
	C	The λ_{max} calculated using Woodward-Fieser rules for  is? A) 226 nm B) 240 nm C) 249 nm D) 253 nm	1	
Q4	A	Give classification of polymers on the basis of Tacticity.	2	[5]

	B	Explain, why CPVC is not preferred for making electrical fittings?	2	CO1
	C	Give examples of Conducting Polymers.	1	
Q 5	A	Malachite Green is used as a direct dye for which of the ***two*** fabrics? A) Wool B) Cotton C) Silk D) Jute	2	
	B	A natural dye is obtained when catechol is condensed with phthalic anhydride in the presence of aluminium chloride at 140-150^{0}C. Mild oxidation of this dye gives trihydroxyanthraquionone. Identify the dye: A) Indole B) Alizarin C) Indoxyl D) Purpurin	2	[5] CO3
	C	Picric acid and Naphthol S are examples of _____dyes	1	
Q6	A	Giving example , explain anomers and epimers	2	
	B	Glucose and fructose give positive tollen's test. Explain the reason	2	[5] CO3
	C	Give two examples of Polysaccharides.	1	
SECTION B				
Attempt all the questions				
Q 1		a) Write the detailed mechanism of polymerization of ethylene in the presence of an organic peroxide.	10	[10] CO1
Q 2		a)Giving example, explain condensation polymerization. b) Explain the mechanism of formation of PF resin in acidic medium	10	[10] CO1
Q 3		a) Compound A, $C_6H_{14}O$, does not react with sodium metal and does not discharge the color of Br_2 in CCl_4. The ^{1}H-NMR spectrum of compound A consists of only two signals: a 12H doublet at δ 1.1 and a 2H septet at δ 3.6. Propose a structural formula for compound A. b) An organic compound B with molecular formula C_3H_7NO gives IR absorption peaks in the regions 3413(*m*), 3236(*m*), 3030-2899 (*m*), 1667(*s*), 1634(*s*) and 1460(*s*). Give the probable structure of compound B	5 + 5	[10] CO2
Q 4		a) Give chemical reactions to establish the structure of Isatin b) Give synthesis method for Indigotin from Isatin with chemical reactions	5+5	[10] CO3
Q 5		a) A compound with molecular formula $C_{14}H_8O_4$ is a natural dye and is a derivative of anthraquinone. Which chemical reactions establish the following facts about its structure?	5+5	[10] CO2

	a) The presence of 2 –OH groups b) The presence of 2 –OH groups in adjacent position c) It has 1,2-dihydroxyanthraquinone structure b)Write a short note on 'Spin-spin coupling'		
SECTION-C			
Attempt any one question			
Q 1	A) a)Discuss the open and Haworth structure of Fructose b) How will you synthesize Glucose from Arabinose? c) Taking example, explain mutarotation. OR B) a) Write a note on Inversion of can sugar b) Give synthesis method from glucose to fructose c) Write a note on Killiani –Fischer Synthesis . Support your answer with appropriate example.		[20] CO3