Roll No. Total Pages: 04

GSQ/D-20

1066

CHEMISTRY

Organic Chemistry

Paper: XVII (CH-303)

Time : Three Hours] [Maximum Marks : 32

Note: Attempt *Five* questions in all. Q. No. 1 is compulsory.

Attempt *four* more questions, choosing *two* questions from each Section.

- 1. (a) Define carbohydrates. How are they classified ? 2
 - (b) What are equivalent and non-equivalent protons?Explain with examples.
 - (c) How will you differentiate between cis and Trans
 1, 2-Dibromocyclopropane using PMR spectroscopy?

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(d) What is Grignard's reagent? Explain method of preparation of Grignard's reagent.

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Section A

- 2. (a) How many PMR signals are expected from the following compounds:2
 - (i) $CH_3 CH_2 Br$ (ii) CH_2 — CH_2 Br Br
 - (iii) CH_3 C = C H (iv) CH_3
 - (b) Explain shielding and deshielding effects in PMR spectroscopy. Explain with examples. 2
 - (c) How can you differentiate between 1,2-Dibromoethane and 1, 1-dibromoethane usingPMR spectroscopy.2
- 3. (a) What is spin-spin coupling in PMR spectroscopy?Explain with examples.
 - (b) What is coupling constant? How can be splitting constant used to distinguish between cis and trans isomers?
 - (c) Discuss PMR spectra of ordinary ethanol and ultra pure ethanol. Explain the difference between them.

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4.	(a)	How can PMR spectroscopy be used in	
		differentiating ethane, ethene and ethyne? 2	
	(b)	What do you mean by chemical shift? Discuss the	
		two factors which affect the chemical shift. 2	
	(c)	An organic compound having the molecular formula	
		$C_{10}H_{14}$ gave the following PMR data : 2	
		(i) Singlet 8 0.88, 9H	
		(ii) Singlet 8 7.28, 5H	
		Assign the structure to the compound on the basis	
		of above data.	
5.	(a)	Write the structural formulae for compounds with	
		the following molecular formula and which give	
		rise to only one PMR signal?	
		$ \mbox{(i)} C_6 H_{12} \mbox{(ii)} C_2 H_6 O \mbox{(iii)} C_2 H_4 B r_2 \mbox{(iv)} C_8 H_{10}. $	
	(b)	Explain the following: 2	
		(i) Anisotropic effect (ii) Enantiotopic protons.	
	(c)	Discuss the applications of PMR spectroscopy. 2	
		Section B	
6.	(a)	What are Glycosides ? Write Haworth Projection	
		formula of methyl α , D (+) Glucopyroniside and	
		β, D (+) Glucopyranoside. 2	
	(b)	What do you mean by Invert sugar ? Explain. 2	
	(c)	What are organolithium compounds ? Why	
		organolithium compounds are more realtive than	
		Grignard's Reagent ?	
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7.	(a)	Explain the following:	2		
		(i) What degradation			
		(ii) Erythro and Threo diastereomers.			
	(b)	What are Polysaccharides ? Explain.	2		
	(c)	Complete the following $P\alpha^n$:	2		
		(i) $O = C = O + C_6H_5MgBr \longrightarrow$			
		O 			
		(ii) $CH_3 - \ddot{C} - H + CH_3 - CH_2$			
		$-CH_2-CH_2-hi$	→		
8.	(a)	What is Kiliani Fischer Synthesis? Explain.	2		
	(b)	Prepare 1°, 2° and 3° alcohol using Grignard	's		
		Reagent.	2		
	(c)	Write the Haworth projection formula of maltose.			
		Assign glycosidic linkage also.	2		
9.	(a)	Write the modern mechanism for the formation of	of		
		glucosazone. Why glucose and fructose form th	ıe		
		same osazone ?	2		
	(b)	Explain the following:	2		
		(i) Mutarotation			
		(ii) Organometallic Compounds.			
	(c)	Give two methods of preparation of organolithiur	m		
		compound.	2		