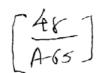
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butanediol.

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SARDAR PATEL UNIVERSITY

M.Sc. (CHEMISTRY), Semester – I, Examination Wednesday, 6th April 2016 PS01CCHE02 - ORGANIC CHEMISTRY – I

Time: 10:30 am - 01:30 pm		Maximum Marks - 70		
Q.1			[08]	
	Write ONLY ANSWERS in the provided answer	book. [e.g. Q.1 (1)-(b)]		
(1)	1-butene and 2-butene are			
	(a) Positional isomer	(b) Skeleton isomer		
	(c) Ring chain isomer	(d) Metamers		
(2)	Which of these is the rate-determining step in the	nitration of benzene?		
	(a) Protonation of nitric acid by sulfuric acid	(b) Protonation of sulfuric acid by nitric acid		
	(c) Loss of a water molecule by the protonated			
	species to produce the nitronium ion	produce the arenium ion		
(3)	Which of the following reaction does not involve	nitrene as an intermediate?		
	(a) Schmidt rearrangement	(b) Curtius rearrangement		
	(c) Hofmann rearrangement	(d) Beckmann rearrangement		
(4)	How many total number of stereo isomer are poss	ible for 2,3-dibromobutane?		
	(a) Two	(b) Three		
	(c) Four	(d) Six		
(5)	Addition reaction of alkenes are characterized by:			
	(i) Formation of π -bond	(ii) Breaking of π-bond		
	(iii) addition of two groups across a double bond	(iv) Elimination of two groups		
	Option: (a) i & iii (b) ii & iv	(c) ii & iii (d) i & iv		
(6)	Claisen reaction involves the in	presence of base.		
	(a) reaction of two moles of same ester	•		
	(b) reaction between aromatic aldehyde and ester having α-H			
	(c) reaction between aromatic aldehyde and alipha	atic ketone or aldehyde		
	(d) reaction between two moles of different eaters			
(7)	Aprotic bipolar solvent is favorable for			
	(a) E-2 mechanism	(b) Ei mechanism		
	(c) E1cB mechanism	(d) E-1 mechanism		
(8)	Benzene when treated with HCl in the presence o	f anhydrous AlCl ₃ gives		
. ,	(a) Benzyne	(b) Meisenheimer complex		
	(c) π-complex	(d) Wheland complex		
Q.2	Answer ANY SEVEN of the following		[14]	
(a)	Why "anti" conformation is favored for bimolecular elimination?			
(b)	In Diazo coupling reaction, the diazonium salt is			
(c)	"The position of two ligands cannot be inter changed in fischer projection" Justify.			
(d)	Give at least one method to trap nitrene and benzyne.			
(e)	State and explain Bredt's rule with suitable example. Define the terms: (1) Chiral Axis (2) Homomorphic ligands			
(f) (g)	Give the spectral evidences for the involvement			
(5)	alkene.			
(h)	Mention the application of Hofmann rearrangement	ent.		
(i)	D-L system is inadequate in describing the o			

Q.3 (a)				
(i)	What is the minimum requirement for the following compounds to be chiral? 1] Ansa compounds 2] Biphenyls 3] Allenes	[03]		
` '	What is prochiral center? Assign the prochirality descriptor to methylene hydrogens in 2(R)-butanol.	[03]		
(i)	Explain the following: All chiral centers are always stereogenic but the reverse is not true.	[03]		
(ii)	Chirality descriptor in chiral allene is independent on viewer's position. OR	[03]		
(b) (i)	Answer the following as directed: Draw the fischer projection for 2(R)-bromo-3(R)-aminobutanoic acid. Convert it to newman projection via sawhorse formula.	[03]		
(ii)	Discuss Klyne Prelog terminology by citing the example of erythro-3-bromo-2-butanol.	[03]		
Q.4	Explain the following facts:			
(a) (i)	Dickmann condensation is an intramolecular claisen condensation.	[03]		
(ii)	The crossover experiment confirms concertedness of Bayer-villiger rearrangements.	[03]		
(b) (i)	Justify the following statements: 1,2-hydride shift in Wagner Meerwein rearrangement does not change the molecular skeleton.	[03] [03]		
(ii)	The stability of carbanion controls the pathway foe cyclopropane ring opening in Favorskii	լսոյ		
	rearrangement.			
(b)	Explain the following:	[03]		
(i) (ii)	The stereochemical outcome of aldol condensation can be controlled by base strength. Darzen glycidic ester condensation is chain extension reaction.	[03]		
Q.5	the C. Henring on disported			
(a) (i)	Answer the following as directed: Differentiate the Cope and Chugaev elimination reaction.	[03]		
(ii)	Bromination of cis-2-butene is stereo specific as well as stereo selective reaction.	[03]		
(b) (i)	Discuss the factors favoring the hofmann elimination over saytzev's elimination.	[03]		
(ii)	Ph-CH ₂ -CH ₂ -Br does not show any deuterium exchange when subjected to β-elmination in presence of EtOD/EtO. What information can be derived from this observation? OR	[03]		
(b)	Justify the followings:	1023		
(i) (ii)	Halogenation of alkene is anti stereo selective as well as not a concerted process. Dehydrochlorination of neomethyl chloride; the process is governed by the thermodynamic stability of product.	[03] [03]		
Q.6	Answer the following as directed:			
(a) (i)	at the second state of the second sec	[03]		
(ii)	Electrophilic attack in naphthalene is more favored on 1 st position rather than 2 st position.	[03]		
(b)	The product of hydroxylation from trance-2-butane using KMnO ₄ is a di-pair whereas use of	[03]		
(ii	per acid yields a meso compound. Highlight the differences in their mechanism. What is cyno-ethylation reaction? Describe the importance of cyno-ethylation reaction.	[03]		
OR				
(b)		[03]		
(i (ii	1 1' Command and nore nositions	[03]		
(*				