	े जित्र	ALCOHOLS, PHENOLS	Date Page
1	25/05/20	& ETHERS	- uge
		NUCLEOPHILLE ADON	
		0	0 · · · · ·
	•	Carbonye comp - HH,	R H,
		Carbonyl Comp - H H, Any comp containing - CO	0
		containing - CO 0 grp. R R, ,	
		gyp. R. R. )	R <sup>r</sup> u,
		<u>し</u>	0
		R OH,	R NH
		Toply -	
		Types -	
		Pure - No Log adj to -C	is gip
			<u> </u>
		— — — — — — — — — — — — — — — — — — —	 [L
		R H ) R	<u> p)</u>
	-> 5	Ampure - Log adj. to -co a	gr.p
		$R \sim L \rightarrow L \sim L'$	
	• Re	un <sup>n</sup>	
		0 0H	
		Nu Nu	
		Nu	
		0 0	. 16
~		Nu Nu	

Actually, Nie attacks at (07° angle classmate to - co bond, due which to Date TRE Page & bond repelled pright. (HOMO) ore Nu D 1070 0 C (LUMO) ) Mechanism (Pure) -> OH Ο Nu Ht I (rols) Acid Catalysis (dry HCL) Nu NU Nu rids NUL 04 NU б-н 15 HT O + C NU 1 months  $(\mathbb{I}$ C.S. Add. Catalyrs OH NU (droj-HOL) Nu Ð ROR(I) > ROR(I)  $\overline{C}$ ) on (ENG NOTE  $\propto$ ROR  $\bigcirc$ X (Stranic Hinderlance) 

classmat Date Page 2 э́н 0 H CO (i) Chi 1> 2>3 Ĵ. (ů) [] OH > 2 > 3 (+M eft of -oH) 1 CHO (iii) 0 3>2>4>1 .... 0 Q Brg/652 Br 9 HBr (encus) 000 Br Br -04 Br Br. Br Br. Na D.E a mar and

classmate 26/05/2023 Date Page î Rate of 2 e. a 0 > R 11 Nu Addn U  $\geq$ R H > > IL  $\geq$ > 11 OH R-CEN > JH 0 R to 0 Q 0 01 0 11 (1)(11) (11) (V)  $(\vee)$ order rate off of Nü add<sup>n</sup> Ą. Mechanism (Ampune) ) 0 0 0t R. R R NUL -[L] Nu 0 MgK DH 20 HQ O R-mgx 200 - 4 C Н - C - H + Mg H-RO R он Bryx Co 0 C'e R R R-19/ R RE R (if in encess -Mg-X o ngx OH Hio Má R-T r "R R + E O

If plut plon <u>R-Mgx</u> plon t plue because O species first behave sike base. <u>Sp rate of</u> <u>AND with P-Mgx - R-104 > plue</u> classmat Date Page (1,2) V/s (1,4) add " 1 (1,2 add") NUE NU 0 H20 Ne R Pat Col OH Here since C=O bond polarity is more, it behaves like Hard ED 10 Hord ED Soft EO Generally, Houd ED & Soft ED react with Hard Nut & Soft Nut respectively.

and the second classmate Date Page Nü Nature Source R Hard R-Mg-X 24 Hard R R-Li RMgX + Cu Soft R R2 Cu li Soft R-Ph-Mgx Ph soft WALHY Hord H-NaBHy soft No. H - Bayx - 11 Q 1. 'n RAGX 19 2. (D) Mg-X GI (B-Mgx 0 3. Ð Mgx (B-MgK Gi REMAR Ч. CO R R 0 R- Max A ۶, e-M NH ō€ Cu Bragx R) -199-X C 6, R P ( ) ) ) 0 (R)-MgX 0 20 Ð (B-Mgx 7 (1 0 R R 10 22 CH3-C=N A Omg X 11 8. + Θ 420 NH 04 (B) mgx HaO R 9, CH3-Cl -1t R-CH3 NH3 (inine) R Max R-MgX R-H But 10 + R-MAX R R-H + HCN (minor) (major)

never acidic CLASSM - CH3 IS Н Date acidic of Nry & -Nry is Page E-Mg-X R-H + 11. MgX e ·H NO2 12. R-MgX CH2 R-H CN -Mg X R-H 13, CH3-CECH R-MgX 14 CH3-OH R-H 00 ng-X P 15, R R-MgX A 16 NHZ R-H 1 (cm - mger Q 1. Ó 1 ph Ph-ragen • 17 00 00 C ph 1,2 Adan A 2. P.A.-Mg.RA - ph due to 20 PI 0-00 1,4 Addn Chy-most ph to stearic 3. Ph 力 hinderence Ph Fh Fh Ph 0 1 Cu Ч, CH3-Mgrsz 2 0-Onti 5 0 CH3)2a 1 Ph - MgBr Q Ph

classmate Date . Page NH R-C=N R-Mg-X -11-.C.  $R-C=N^{0}$ HaD 0 NOTE: R R R (invine) NHZ C NH2 H+/HO HQD NH R R R R нЭ ·H , - C . 0 NH3 1 +-1 70 CH2igen \$2 + MgBL mongan 111 ELCO Acres MgBr 1 1 . " "

CIASSA Page which 0 G.R ? forms ſ DE L. 03-cl CH3-MgCe 1 -2. Mg DE MgCe CL 3. Ng DE ga Ce 1 4 CL rgce mg 1 DE HD Mg A 5. ung ? (40 G 1 6\_ C Ma Ð D 0 7. Mg 0 6 0 gen Br Mg DE 8. 3 ci a rgce ce

and the second classmate Date Page Marce α 1 Mg 50.212 (1.) 9 0 οĖ MgBr B . Mg 10 ק DE Myrsn Br Br Br mg (], DE á rigce a MigCe Mgll Ce 6 Θ Ma 0 12 θ C 0 С DĔ MgCL 13, Mg Ò DE D rigen Br Mg 14 Cl D A O OLMONH (mgce) DE NHe 190 ο Ω  $\cap$ Mg 15, ć On (Mg.CL) DE RC HO -OH 16. Mg ce (Xmgce) 11 DE ğ 17  $CH_{3} - C \equiv C^{\ominus} H_{3}$ Mg いよーい言い DE

Actually <u>5-bond</u> of Nachy 2 GARHy act as Nil, since cor. bond blw central atom the Date Page H H Attout CLASSMAL 4. >0 + liAlty -> (R2CHO)AL +40 4. R-CH-ON Θ И >=o+ ===OALH3 410 cannot NOTE: 1 Compound with H acidic GOR. form OH 2 Ringx 0 0 RINgX R R 0 R2 Culi/ Ŭ R P -Hard EO & Soft NO Rean stops here ! (3) 114 UAUN R-CH2-OH - 6-9 R [1-] 3-1 NaBry 1-17 R-CH2-OH C --- 81 [[]] 4 to s pr 3 WARHY -c=crean No- $-c \equiv c$ Man NORMY NO HACHY on NOBHy 4)  $-c \equiv c -$ -c=c-Cell3 (metal)

Balant Nº reduces classmate annanic System all comps Date ł Page concept - COOH \$0 Narsty 0 OH O only in annamic LAUM System 0 - Ring X. -db HR/Roney-Ni Carbonyl OH (rowdered form of Ni 04 0 6 GALMY (1, 2 addn) 12 4 01 Nasty 11 NARHY (1,4 add n) OH Narshy (100%) + CeCl3 7 0 WALING 11 OH 11 Rce NRBHY 1 Ъ (even though) soft Nu ) 8 Narry NH2 -NH (9).04 *LiAlty* , H or Narry L. (even though soft Nu)

In gaseous phase: Ro < 04classmat ag. medium: RO > OH Date Page (nuclophilicity) う大り Narsty (10 QH or CALINA 0  $(\Pi)$ CAEry 0 1 -CIAlmy R R R' "11 OH ОН Nabry rean NO since on-Nu poor poor source & Norsty (12)  $R = \frac{0}{10-R^2}$ 0 HO-R' u'Alry + 011 Rrean Narty No 1 B 3 P ----0 0 LACHER 13) 0) R + R'-R S OH OH Narry No rean . 0 JACH. 14 R-R NH2 NH lifety 0 UNN-R R-Ro NH-R. R 9  $\frac{1}{R}$ LiACHY R NH H + R

HI/Red P R HOR classmate R-C+13 + R2-H Date Page NH2 10 0 0 1 11 HO Q 0 CL. CL 0 0 Ph 0 OH ()1912 CH3-MgBr 3 HI/Red P 3 LiALHy 9 . Nably Ho/Reney NE (5) ż (1)@ 0 A. 1 (2) OH (1) HO 04 (1) X OH O (2) P.S. (1)11 5 1 r.JHz HEREd R-CH3 + NH3 · R-CN 2 HI/Red P R-NH2 + CHUp R-NC + CHy HIREd P ph R-H 002 NH2 HI/Red P 0 0 3 OH 40' OH NH2 HD, Н 0 HO. + OH OH per OH

classmate Date NH2 Pag 0 0 0 11 HO 0 14 HO CN 4) 1h 04 DH NHZ -1 A. 0 5 U OH HO DH NH2 CL HD 10 OH' DH REAN HALOFORM - 1 R K 0世 X2/OH-0-CHXs R· + Haloform CLETON CHCLZ Carried Street + (grantsh) ( Colourles 1.3.) 1 h BA2/OH-+ CHBA3 =(Rid) L (Red/ Colourles Lig RAD-+ IL/OH-Ľ., 01 CHIZ Ļ (violet) ( Yellow ppt.) NOTE X2/011 lo - NH2 JH

classmate Date Page B12/04-1.1 + CHBA3 0 NHO Nr BA2/OHsince H of 0 -NH2 more acidic (1 eg) than -CH2 NH2 3. Reagents: ( KOH, NOOH, GO(OH)2, BO(OH)2) X2/04-Nazcoz (X = (U, BL, I))(NOOX, KOX) OX-Any source which produces X2/0H-Mechanism Och I-I 0-1 0 Qu-I CH-I CHI; OH 0 I-I CI30

Acidic Nor HOH 7 TN HOH classmate Date. Page -I eff of 3-I & carbony Now, due to become very good. to CI3 group, ED centre. a Nü, instead Hence, OH- behaved as of base, taking Ots H of OP CI3 CI3 Ht enchange Ho-+CHIS Haloform / godoform Test condit: Any comp. (not necessarily carbonyl comp.) which gives CHI3 on war with I2/04 will give godoform test. give Which tre Jodeform test. Q. OH CH3-Cl CH3-04 1. X 0 MH I2 ) OH 2. `u DH The of th OH 3 MOH Br

the only 1° Alcohol } gives Godoform test ñ classmate which ) Date Page cl OH 1 4 1 CL OH 0 OF 5, -140] CL OH 6. U -04 [+tro] on cl OH CL RA 0 OH 7. OH 8. ci OH -> -[HQO] Br OF 22 CH3-OH 9 X H E200 10 0 |] O Tom 11. 12 In OH 4  $\times$ DH 13  $\mathbb{I}_2$ In 14  $\times$ Ó DH OH 15, I2

classmate Date Page о н н In X 0-11-16 CH3-OH CH3-N2 OH Tu + N, 11 17 OH NZ 0 OH 12 18. OH-NT IZ J 0 DH 19 U OH OH Not Ir の世 OH ~ X 20 0 I 12-7 CH CHy- OTS CH3-OH 21, X H Н Tr V \_\_\_\_н 0H 22 OTS OM 0 OM Ta 23 X н OH OTS OM 0 DH To 24 V HO I2 25. X 1 OTS 04 O 11 26 27 о Н Н 28. L ille

classmate Date Page Н 29, Ц 0 1.4 • . 30 31. X(04matches acidic DH of H - OH ) Co - ci 32 ce 11  $\times$ OH QH X 33 <u>6</u>0 0 0 34 OHT ļI 3 + X HO юн OH 0 OH 35 See. 11 0 tr. нб 000 OH Ð 36 0 || 11 3 ~> ~> OH 00 0 0 37 OH Î 11 0 11 + H OM 0 0 Ci 011 0 0 0 0 OH' CII \$ 38 Active Methypene) T 39 IJ N02 11 CI C 20 *I*<sub>2</sub>, OH CI3 40 CH3-CI3 - 22 CIz -0 -NO2 OH 0 41.

classmat Date Page o Н 42 ٠, Ω 0 4\$ 0 NO NU addin ٦. due to Mison frinderance I 44. X Jz 0 0 Z NO 45 Nu add In C due stearing to 11 0 hinderance 1 υ 46  $\overline{)}$ Active Methylene X 10 ò 0 11 47 X 0 OH 0 R 48 (Active Methylene)  $\mathbf{O}$ OH 0 0 T 49 Ph Ó 80 Ph Х 0 OH 48.) 51, (Same as D OH

classmate Date × 52 0 53 O 0 Actine Methylene SU. L formed 55, I I r formed I I 56 IL -I formed ce 57 u 7 Kr 0 formed 58 L U 59 11 Un Even though Active Methylene, \$ 60, due to stearic hindrance, no Nu add of -on-X (Stearic hinderance) 0 0 61 62 0 (stearic hinderance) X

ООН classmate Date Page Ps î (Stearic hind.) (X)63 Ð Ba Br 0 ( Stearic hind.) 64 -04 TF 0 0 0 65 10 66 X 0 0 0 67 ) 9  $\cap$ Or 68 ě. 0 69  $\left( \right)$ 0 -

classmate Date Page 02/06/202 which Comps. give (-ve) Jodoform NOTE test. 1 0 彤毛 11 a,N 0 Ο 0 2 NO2 Br Br 0 0 0 tt OH C IST NH-C which test (tre) Iodoform gure Comps. 2. С Ð 0 4  $\cap$ 0 0 0 04 11 0 OH 0 Br

classmat. Date Page PREP<sup>n</sup> OF ALCOHOL (From Amines) NaND, 1-1-1CL R-OH R-NH2 CHND ] R-OH NaNO2++4804 [HNO2] But, NOND2 +HU CH3-NH2 CH3-0-CH3 + CH3-04 [HNO,] (minor) . (major) (43-04 (major) + 03-0-Ch NaND2 + Hasoy [HNO2] hydrolyses H2804 Nonlos/ exclus HCL CH3-0-NO + N2+ 240 dil. Hasay, \* in presence of 10-NO 0 8 will be hydrolyset wit CE NaNO2+HCL NaNO2 + HUL 0 0 in encess NHZ NH2 NO + Ó în 0 encus JE NE HOOY NOND + HREDY 0 .

e Migraty as most EDG 1. TINY Ð classmate Date e density 1 Page 106/1023 Mechanism Nu adan 10 R - NH - N = 0HO-N=0 R-NH2 + 5 00 R-N=N-OH . Ht Ð R-N=N-OH2 R=N=N-1000 T=0-soc, 8 if R = j 0 isolated R-ND b-e can otherwise (major) +N2 R-NOP ROM Alkene Map (Base) R-NO2 + R-ONO NOZ present en. pys. as PCE R-CL used NONO2 + HCE P-O-R ROH

classmate Date Page 2° R-N-N=0 RNH HONO + R R R 1 3: R-N-R HN02 N-NO, + -R R. R R if 0 R-OH. \*H2 O consider this. But not do 10 - NH2 form -ОН. only - in the NHZ 0 (i) HNOZ 11 P2 (47% (48%) (2%) P 2 Ð (teres OM (N [HINO2] NH2 NONOZTHER (A)2 (F) (iii [HNO2] +/ ce F OH Sear . NO2 + NH NON02 FACE + 4 (All possible) ND

classmate Date Page DH 202 NH2 [HNO2] (iv + + + NaNatha All possible. OND 2 PINNACOL PINNACOLENE REARRANGEMENT Formation 0 Mg 0 0 1 T - 19 + 20 tig on11 MgH 0 OH OH Ha.O (Pinnacol)

D/conc. Harra, classmate DH OH Date Page conc. HR8Dy (Vicinal dihalide) Pinnacole Reactant (Alalebyde / Ketone) Pinnacoline product Regent dil acid r Mechanism (a)Æ dil Haboy OH (CÐ meri (H) Cb stable OH E (b) OH Ð -0407 OH (a) ~ H-shift Ð 11 Ð COF DH NOTES Migrating tendency H-D 2 PR Ph 3° > 2° 7 1° 2 2 Ph 7 7 (with EDG) (with Ewg) Methye Q the Write 8 mech. product 1. Ð 4 OH DH OH 0

classmate Date Page 2 Ð DH DH OH ò, , 3, Ð OH 71-Ē Ч. OH OH. OH Ó 4 D P P Li D > 5, 3 A £ 0 OH OH P Ρ D P 1. P D Ð OH D 6. OH OH

classmate Date Page Ph PR Ph 7. 1 DH O OH DH Ph Ph Fh 8. Ph OH Ð Ph OH OH 0 -1-5 Fh ph PP. 9 // 6 5 OH DH OH 4 10 -3 A. (7) DH OH on 0 . ph Ph rg 110 -> OH DH 6 DH · II

classmate Date Page OH OH 0004 OH 12, 0 `Đ S Ð 4 2 1 -+ 0 OH OH OH G oH 13 Œ 7 ゝ Ð 4 3 0 04 OH oy aH Ð 14 0 1 . ph Ph pR p-h rh ph Ð 15 219 Нв HO > 0 0 0 Θ 1 OH \$ 16 1 NGP COH , • 1

Ð classmate × OH Date OH OH Page Ð H 0 0 Ð DH \$ 17. 2 Ē 04 OH anti-periplanar P -OH Ð all (HNU) in -NHZ он comps. Ò DI OH . 0 NHZ 18 Đ. J. J. J. ÷ Ð DH 0 NR HO 11 HO. 19 2 Ð 1 NH2 , Đ-Hr Jen 20 P -CNH2 21 

TIT classmate Date Page NHZ Ð DH 22 DH Ð OH H . NH2 23 NHS DH D -04 0 V Ð 0 -ce În all coni ps Agnuos 3 OH ,ce 24 Đ 0 OH 11 NO 25. ИО ŀ 0 0 Ð e HO HO. 26, Ð

classmate Date Page 200 27. ( )on CL Ð 28 -> H -> Con -> Con 29 ce Or NOTE: 1) In cylohenane, CD formed at anial first, then eq. 1 A 2) Migration of gip in ( ) rearrangement happens only if gip is Anti-periplanar to leaving gip. NO pinnacolere in trans did 3 Since - OH does NGP attack. 1 8 1 1 1. (\*

and the second classmate Date Page Na R- OH R-O- Nat 5 + +2 Ca (R-0)2 Ca + Ha Al (R-0)3 AP + H2 reactivity: 1° > 2° > 3° (alcohol) ESTERIFICATION 0 Ht 0 Цон R2-OH 1R' Hao R· R-(1)(3) (1) 0 E Case -I: 1CHT 20-4 OH R'-0-H  $(R^2 - 1^2, 2^\circ)$ (2) - 0H R OH R OH - 4 + 0-(3) ,1 R Ht Ht (2 (L) H20 -R' - C - OH -OH. p-R 0 (3) O-P) 0-R'  $(\underline{y})$ -R) (3) NOTE: reversible steps All 1. Retention product formed ( (stereochemistry of R&R' retained) 2

CHT Case II: R'- OH  $= R' - OH_2$ Rt  $(R^{2} - 3^{\circ})$ 0 R-1 ОЧ Ю R H o-R' NOTE: Racenic non formed OH DH - 1 -140] 0 0 1 +0,07 → ton+ 0 оп OH HIDY DR Ph(OAC), 04 -040) PR Papz NH2 - Von 04 -[~10] -[NH3] 此+光 NAS on .1' 1 0 NH Mon + on -(NHS) ion + 1 (J.T.) NH-R 0 Mon POH + 1 -[NH2R] on on -[nav] it + it · · · · · · on NH-R

of yitz Кон HIOY No rian NOTES 1. POCOACY  $u_{on}$  +  $w_{2}$  +  $w_{0}$ If cyclic did, man only takes place if -cis did 2 HIO4 <u>он</u> н/ No ruen 1 И HIOY  $\frac{1}{1} \frac{1}{1} \frac{1}$ 0 DH OH × 9 2 nzoy NH2 , CF 1 -1  $\frac{HTOY}{OL FDCOAC} + \frac{HTOY}{O} + \frac{HTOY}{$ 2 2  $\frac{0}{H} + \frac{0}{102} + \frac{1}{120} + \frac{1}{1$ NH? 04 + / Ê  $\frac{1}{4} + \frac{1}{1} + \frac{1}{100} + \frac{1}{100$ HIOY 3 0 OH Pb(OAC)y +  $CO_2 + H_2O$ + H OH 1

4 HI-OU-+ CO2 + H20 `он + 11-CH- OH NOTE  $CO_2 + HaO$ OH HO ОН - (mao] OH DH -[NH3] 0H OH . and a DM HIDY NO- wan NOTES OH Cyclic intermediate is formed in real. Here, since both -OH in On. post, cyclic intermediate is not able to b form. However, den H304 since cyclic intermediate is able to form. 1100

which of the following react with HIQy? 11 \*Q will not JOH 104 ОН DH 2014 111 04 "11/c OH (U3)3C (Cr3) C DH A. OH OH OH (Even though trans, can form cyclic intermediate (Cis) он OH (03), C. (crs), C, OK (cis) u (X)1 - 2-0 12-1. 1 - ----~

classmate Date Page OF ALCOHOL OXIDATION inter y 1 65 ..... \*\*\* \* [0] R Rrcc OH PDC 4 0 X2/0 11-0 collin's Reagent 0 ο cold K2 Ch2Oa/Ht andyd Croz Cu/SA3K Ag/ST3K NBS NCS [0]cone konoula conc. HANDES Cros/Hessey (John's Reagent) 0 F1 [0] OH Ri R2 PEC K2 POC Se ..... X3 PA Komon (D cone Remaining acidie Romana ast kinonog/nt Cros/ retay (John's Reagent) ~ 15 on [0]> Cu or Ag 573 K 0 NOTE: H2/ Pol R Or R ce

classmate Date Page John's reagent selective MnO2 2 regents are NOTE OH / Н 3 Ď. • OH -4 0 0 O он DИ H H Q OH on [0] (1) bot unney -+ CU/SP3K 2 PCC, PDC, MA 10 19nD2 1415 0 0 0 0  $+ CO_2$ h 11 A. A.L. 10 OH . HO 0 0 # H 2. 11 0 H 1 0 4

classmate Date Page 0 0 on 11 3. H 0 D 0 DI1 4. 0 DH -DE - CARBOXYLATION (who magent) .-(I)Geninal acids H2C. IJ -[c02] он COOH COOH 2001 HC COOH HEC Ш он -fco23 -[02] OH ł CODH Q 11 NOOM Cl ne cappo Α NGP 4 n. 4 . . . Mechanism 20 <sup>6</sup> H-0 04 HOh он

classmate Date\_ Page\_ B- Keto Acids  $(\mathbb{I})$ . \* 0 D 0 Δ 1 R R DH CH3 0 0004 5 Δ CODH Ģ Trick: A rian NO (Cyclic T.S not able to form if -COUH on bridge head C 0 0 Cook Mechanism 04 ---HO 0.-A OE + 102 R. 20 Cyclic ToS 0 RU

classmate \* Cty  $co_2$ Date Page COUH 0 NOTE: 0 0 : decarbonylation soola - line Q Give order of acids. the following of , COOH (11) (1)CH3-COUH 0004 NOZ CH3-C004 NOZ (|v|)(11)CODH NOZ A. Θ NOZ NO2 Ou. stability: 0 >0 NOZ (Hearry -I) ( resonance ) Resonance math (v) > (ii) > (ii) > (i)3 EFFECTS HEATING ----Carbonylic Acida Hydrony Τ  $\propto$ . (Dimension) 0 0 11 OH R-Ο 0 DH Õ R 0

55MAte		R-X ZN/HCC ZN/NaOH R-H CC ZN/NaOH R-H CC Zn/Cu Zn/Cu Zn/Cu Zn/Cu Zn/Cu Zn/Cu Zn/Cu Zn/NaOH R-H Zn/Cu Zn/NaOH R-H Zn/NaOH R-H Z	
		$\frac{\beta}{\rho_{H}} = \frac{\rho_{H}}{\rho_{H}} = \frac{\rho_{H}}{\rho_{H}$	and the second
		$\gamma, \delta$	
(O. L	(I)	Amino Acids	
	-	R R NH NH R R R R R R R R R	
	•	B R OH (Elinination) $R$ OH $NH_2$ O $-(NH_3]$	

				Page (
9	7,8			
	o(1			
	он	<u> </u>	NH J	
-	R NH2		ß	
			(Lacturn)	
			(lactur)	
-		<u>In</u>		
		8		

Date Page ETHERS  $R - OH + R^{2} I$ HI  $R \xrightarrow{o} R'$ Anhyd. HI OR Hyd. HI R-I + R)-04 conc HI dil. HI (or HB1, HCL) Mechanism 11.1 . . . . H-I - R' R-0. R) R. 0 (a) (b)TE (6) (a) SN, OL SNZ SNI OL SNZ R-I+R-OH R-I + R-OH cyclic Intermediate Nü atlachs NOTE: No 1. acc. to strain \* (if SNI not taking place) hinderance Ry and Rz: - 1º/2º 94 2. SN2 followed - 3° + PAS (ankyd. HI) or R2: - 3°+ PPS Ry SNI followed - Resonance stabilised

classmate Date\_ Page Write mechanism 0 8 product. , H-I ~° ~ 100 TO 1. CH3-OH + I-CH3 H-I 0 50 2 IO CH3-I+ Пон 9 To H-L 0 Ct 3 CH3-I + он ᠿ H-L Ö 4, T он I | F-1 T andrid, HI 5, C Ctz-I+ 0 -04 H-OE снз-он hyd HI + Ð I\_ -I снз-он +

classmate Date Page H -0 E 0-3-04 11-7 0. 6. VO. Ð - I C 6 7 HI Ph rean No 1h and the first state • • HI rean NO 8-Ph OH -...... -1 1-17] 9 0 PA -PA Ph. CHOH (SN1) ()) HT OIH H CH5-0H Ph-10 P h ph — 🕀 + Ph-I I-1 H HI I PR-OH + Org-I 11. ph Ph í . •• 1

classmate Date Page Ph 0 0-0 0 HI OH 12 -Ð re PR-+ z-OH PR-I + (3. 10 ο Ph HI ph CH3 Ph-- OH Phpp Ð -ch • 1 CM-PR-O Ţ PR-OH + CB-Ph-I HI Æ 14 005 PR. Ph. OH + ò ph H I Τ-Pf HI 0¢ Ph-04 LS, P.h ph -0' Ph Ph OH OH ۱ H + - Đ HO-Ph-OH + HO-PA-I p.a. ľ (D) (C) [6. HO NO MI 40 OH 0 0 0 0 OH OH H + I OH 6 OH I 1 21 17. Ph-D HI DH он 10h 0 Ph 0 Ð Ι OH 0 Ph-I OH I-+ 0

classmate B.S : C-T > C-D > C-H Date Page +1: - CT3 > - CD3 > - CH3  $-CT_3 < -CD_3 < -CM_3 \quad (\alpha \frac{1}{B.S})$ HH: only +I effect) 103 CT3 Ð CP2 CTZ 18. 0 0 (1)H HO CT3 CD3 Ð 0 0 CT3 Ľ (HH eff) 19, Đ¢ 6  $(\uparrow)$ С 0 'cD3 cP3 CFS e (P) OH + 0 0 CTS Н 0 OH C/D 20. HI T Cyclic intermidiate () € charge more stable 3 21. A HI OH I HI OH 117 2 DEMI SI I \$ 22. HI I OH -H+ 0 RO OH A 23. HI HI I I 0-DH no T Ht e e I

CHOH Bnz/CH2DH Lo LotzoH In P classmate Date\_ Page\_ Ĵ⊕]S Ð HI £ 24  $(\checkmark)$ Ð stable CO Ð 0/ HI \$ 25 I I Ð 6 stable CD Hydrolysia of Estar HOTH+  $R = 0 = R^{2}$ (1) (2) R-OH + R<sup>2</sup>-OH  $\frac{(2)}{R-OH} + \frac{(1)}{R^2-OH}$ Mechanism (a) (1) (2)  $(a) R - OH + R^2 - OH$ 4 (2) Hal (1) $R = O = R^{2}$ R. 'R' ) (2) (1) - R-OH+-R-OH (a) (6) NOTE :  $4\beta R \& R' \rightarrow 1^{\circ} \Rightarrow SN 2$ SNI in rest of the cases

classmate Date Page 19 RD/H (i) + CH3-OH 29 СН3-ОН -0. 19 HO IN Ð (ü) 0 CH3-DH + 19 11 + 0-3-04 H F60/Ht (m) CH3-OH + 0 CH2-OH rep Đe 19 04 + CHOP Clairen reassangement (in aryl-allye arge-arge ethers ) or - 18 18 0 Mechanism 3 18 18 EAS DH 18 18 B A,B FHOD post blocked, But, if ortho i.e 0 able tautomerion not Þ OH Δ B happens take EAS place again

classmate Date Page 118 0' OM 18 Δ e σ 18 0 04 18 0 0 18 01 18 Δ 0 0 1 Δ С D 0 118 OH Δ Θ 0 18 OD -18 0" 0 D A 1 18 present, the one n tendency transferred with H& D H JOTE: År better les tautomerion tendency leaving H ine

classmate Date Page PHENOL OH Đ, CH + θ 0 (plazomethane) 0-CH3 0 0-Nat OH (CH3)2804 NOOH 0 0 rean NO NAHCOZ 6 O O O 1. DH 0 NOTE Ro - - CHrs R Any comp. with acidic H reacts with NaHCOp. 2. 8 pKa ≤ 7.23 NaHCO3. PKa of orthonitrophend 1-1-

classmate Date Page Which rean gives with  $CO_2$ on Nahcoz ? 8 CH3-OH X 1.  $\times$ DH 2. OH 3. Х 0 OH X Ч. 0 OH X 5. 0 NO2 OH 102 pKa = 7.23 6, -0 + ' 1 -Ŀ., 1: 21 . . (1. V. .. DH pka = 7.14 7.  $\checkmark$ 0 NO. OH có) NOZ  $\checkmark$ 0 NO

				Classmate Date	
	1. 0 No2				
~~	OH D NO2 NO2		pka = 6.73		
~ ~	он N <sup>0</sup> 2 / N <sup>0</sup> 2				
<u>12</u>	NO2 NO2 NO2 NO2	Land			
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classmate  $\sum_{n=1}^{\infty} \sum_{n=1}^{\infty} X = 15.57$ Date . Page\_ 0 0 pKa = 13.33  $\times$ 18 0  $\times$ 3.11 11 19 0 10  $\times$ 20 HU Aromatic \$ 21 + >> Highly acidic -1-HO 0 (X)pka = 7.32 ₹ <u>22</u>, - -HREDY 23. 1 J' 24 X HCN 25, CH3-CECH  $\times$ CODH • 26 Highly activating -N CODH # 27 (X)0

CIASSMAte Date Page COOH . 28 0 ٢ NO , 29 HO SOZH 30 0 HCL 31. . L 00 32 ОН L 0 COOH 34 OCH 1 C OH 35 1 F × 0 0H L 36 T X 04 OH 37  $\times$ • 0 OH 38 X 0 OH

¥			classmate
	04		Page
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CLASSMALE Date Page AgNoz 67 P+I2 p) 67 20 R R· I Ng DH NO Naut Blue - R' 4 R colour HNO2 NOZ Pseudonitrolic Acid B l B 30 PFIZ Ag NO2 e, m -R3 Rz R1. R NO2 OH I Colourless No rean Nadh HNO2 PREPn ALCOHOL OF Hydroberation R -> omom HOD/H+ Ð Ē он Mg(OAC)2 (Mass NOUSHY ) OH-OH HyloAc) (CH301 NO SHU , OHoch 19(0x2/020 NaBHy, OD-ÓD Hg(OAC)2/HaD NARDY , OH 0H \*\*\* •

classmate Date Page B2HE/THF CHECODY B2HE/THF Heoz lon-B2D6/THF 1302/04-B2DG/THF 1202/00 D B2DE/THF 00 0202,04-B2PG / THF OD 0202/00-B2DG /THF CHICOOH 0200/ THF Chacood lodid konoy on 00 DS DY MOLHEDS Mao óH RCO3H/CCUY ------0 OH RCO3H/H2O OH NOTE: hydroboration BaHG from in comes Н from H202 & OH comes Norsity in OMDM 2. from comes Н H2O from comes 8 DH

Date Page PREP<sup>n</sup> OF PHENOL (From Currene) H+ 2 + Ö 0 or H3PO4 o HF n Haboy 1 Cumere rw/rD 102 0 0 via Fre radical Cumene È mech. hydropenonia 0 5 0 Ð .0 - ph Ð 1 HeO 0  $H^+$ 5 0 Ph enchange 5 0 Ð DH CL YOY 11 (i) 09. NOTE 1 0 C HOT H.P • OH OH NOBHCODIA (ůi) 0 3:1 0 Nat 8034 OH Jack (in) 0 0 0

classmate Date PREPN OF ETHER 2 R-OH Hesout-A R-O-R + HaD (Adu Aubh)eg HABDY DH T-180°C 42804 T= 140°C Rean with peroxide on standing in contact with air, most aliphatic ethers are converted slowly into unstable peronides presence of peronide is indicated by The formation of a red colour when ether is shaken with aq. soll of & Potavoium Khiocyanate Amnonium sulfate Fe<sup>3+</sup>  $\xrightarrow{\text{SCN}^{3+}}$  Fe(SCN) (3-n)-Fe Perovide + (n=1 to 6)can be removed from ethers no. of ways:-Peronides in a - Washing with sol's of Fe<sup>2+</sup> ion (which reduces provide) Distillation from conc. H2SOy (which oridizes permides) for prip of Grignard reagent, ether must be of water & alcohol. NOTES free of trace absolute ether is prepared by distillation of ordinary ether une apsource course water, alcohal & perovider) & storing over Na metal This with

PHENOL REAS OF DH DH He/Raney Ni 0 1 OF liferty [0] 0 Naz C1207/ +2804 Kacn207/Ha804 OH Ð cros (Benzoquinone) DH Elkis rean 125208 0 115. DH MAN in/dust -0 Josef Las a Visia -Nat 1 Nady 6 rean NAMCOS No 21 EAS OH DH. OH dil. HNO3 NOZ 0 0 Ο F A. Chiller Az June 7. 10 S. an (o > p) \* (due NO2 H-bondling) to OH D NO2 NO2 conc. HNO3 0 -12 F NO2 1 cie. (major) Picnic Acid (minor)

Date Page DIA 42804 OH -8021-1 Conc. HNOZ NOZ -NO2 0 0 SONH NO2 PCls ١  $(Pho)_{p} = 0$ B12/HaO -OH Br BL (excess) mm OH Bizthao Br BI 0 (3 mol) Br ----FAR 04 B12/CS2 ,Br 0 D or cely or chills (p>0) Br OH H2804 EOSH 0 (15°-20°) T= 100°C on 1 12804 O 100°C 80341 OH  $A, B, C = (-), -80_3H, -CODH$ if NOTE: B A 0 ć Bri Br Bro Itao 0 . La la ı Bri 1.1511

Page\_ unaffected posts. are Meta 12. on QH RI 1312/140 eg 0 0 8034 SaH COOM Coon Br н н () CH2 OH н н/н  $\cap$ и /онom OH 6-day + 0 0 HIH/HCL OH OH C ----a on 12 il OH HHH /Ht H++ 0 0 5. Y 2 not () OH 0 (EAS) н н /н+ on or 2 mol HHH no' 0 + 0 ( nrol OH HH /Ht н н (н+ (linean (Polymen) r cross linked 1th (encess) (excess) 04 Balelite Novolac (encuss)

Date \_\_\_\_ Page \_\_ 0 OH Asia 0 Coupling rian σ N=N -· · · · · 1 (Orange dye) OH HNOZ 0v 0 0 · . . . Ŋ NO2 - 04 Reimer - Tiemann Rean (RTR) . OIL OH DH Ļ CHClos + NOOH (Salicyaldehyde) 0 0 . r \* Since Cheldrion ) Effect not strong OH CHCE3 + KOH Ô large size of KD due to H 0 % OH CCUY/OH-OH 0 7 2, \ 1.51.3

(1,1 Elimination) classmate H-c-ce port Cces Date CHC42+OH - CC42 Page (cheoro carbere) Mechanism Nat ONat 0.0 Celz ne NAOH (EAS) O NO 9/ 0 0-Nat çe O'Nat OH \_ce OH 0 1.1 -[40] 9K4110 OH D H+ 0 0 (chelating eff) 1 04 0e DH 0 0 . . in a start Pyridine (Aspinin) [Acid Acid Derivative does not react with 1 -. ----1. CH3-OH/ HT 11 0 [-DH -DH does not with react

	And The second sec	Classmate Date Page
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16/06/2	03	
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and the second		
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classmate \* (Here Atche gove to 0 instead of C=0, so that EAS can take place Date Page Mechanism ALL S. S. OH 0 0 Intranobular attack Alch Og o Alch Ð σ EAS O ALCO O O ALUZ + The ortho isomer has higher NOTE: 1. vapour preson because of chelation, 0H---0= 8 volatile is steam In para isomer, there is 2 Internolicular H-bonding with H2O Para isomer is enclusive 2. product @ 25°C (rate controlled product) Reason : lower AH & its formation reversible is Ortho isomer is chief product 4 0 165°C (Eq-controlled product) Reason: Higher DH & stabilized by chelation.

		E(f)	~~H~	ED NH	classmate
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RTR M	iscellaneous				
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