Quiz 3 HCHE111, Elementary Inorganic Chemistry I, Fall 2017

NAME:

Problem 1.(10 points.) Diazepam (molecular structure pictured below), originally marketed as Valium[®] is a medication that produces a calming effect, and is used to treat patients with anxiety, drug/alcohol addiction, and or seizures. What is the molecular mass of diazepam if 0.05570 mol weighs 15.86 g?

Problem 2.(10 points.) Xylose aka "Wood Sugar" is a sugar that was first isolated from wood and thus named for it. It can be metabolized by humans, however its most popular use is in the clinical testing of malabsorption in animals. The **empirical** formula for xylose is CH_2O , with a molar mass of 150.13 g/mol.

- a) Calculate the **formula mass** for xylose given the empirical formula above.
- b) What is the molecular formula for xylose?

18 WIIIA 2 4.0026	Helium	10 20.180	Ne	NEON	39.948	Ar	ARGON	36 83.798	Kr	KRYPTON	54 131.29	Xe	XENON	86 (222)	Rn	RADON	118 (294)		ESSON
8 2				<u> </u>	35.45 18 39.948	—	<u> </u>	36	<u> </u>	\longrightarrow			—¥ ——	$\overline{}$		\longrightarrow		0	E OGAN
	17 VIIA	9 18.998	<u> </u>	FLUORINE		\Box	CHLORINE	35 79.904	Br	BROMINE	53 126.90	_	IODINE	85 (210)	At	ASTATINE	117 (29		TENNESSINE OGANESSON
S	WA 16 WM 17	8 15.999	0	OXYGEN	13 26.982 14 28.085 15 30.974 16 32.06 17	S	SULPHUR	32 72.64 33 74.922 34 78.971	Se	SELENIUM	52 127.60	Te	TELLURIUM	84 (209)	\mathbf{P}_{0}	POLONIUM	$107 \ (272) \boxed{108} \ (277) \boxed{109} \ (276) \boxed{110} \ (281) \boxed{111} \ (280) \boxed{112} \ (285) \boxed{113} \ (285) \boxed{114} \ (287) \boxed{115} \ (289) \boxed{116} \ (291) \boxed{117} \ (294)$		LIVERMORIUM
Ż		12.011 7 14.007	Z	NITROGEN	15 30.974	Ь	PHOSPHORUS	33 74.922	As	ARSENIC	51 121.76	$\mathbf{S}\mathbf{p}$	ANTIMONY	83 208.98	Bi	BISMUTH	115 (289)	Me	MOSCOVIUM
Σ	14 IVA 15	9	C	CARBON	14 28.085	Si	SILICON	32 72.64	Ge	GERMANIUM	50 118.71	Sn	NI NI	82 207.2	Pb	LEAD	114 (287)		FLEROVIUM
ELEMENTS	13	5 10.81	B	BORON	13 26.982	Al	ALUMINIUM	65.38 31 69.723	Ga	GALLIUM	49 114.82	In	MDIOM	81 204.38	П	THALLIUM	113 (285)		NIHONIUM
							12	30 65.38	Zn	ZINC	47 107.87 48 112.41	Cd	CADMIUM	80 200.59	Hg	MERCURY	112 (285)		ROENTGENIUM COPERNICIUM
OF THE							1	29 63.546 30	Cn	COPPER	$\overline{}$	Ag	SILVER	76.961 67	Au	GOLD	111 (280)		ROENTGENIUM
J E	RVICE		ASS (1)				10	28 58.693	Z	NICKEL	46 106.42	Pd	PALLADIUM	78 195.08	Pt	PLATINUM	110 (281)		MEITNERIUM DARMSTADTIUM
Щ	GROUP NUMBERS CAL ABSTRACT SEI (1986)	(00/1	RELATIVE ATOMIC MASS (1)		r name		6	26 55.845 27 58.933	ပိ	COBALT	45 102.91	Rh	RHODIUM	77 192.22	Ir	IRIDIUM	109 (276)		MEITNERIUM
TABLE	GROUP NUMBERS CHEMICAL ABSTRACT SERVICE (1986)		RELATIV		ELEMENT NAME				Fe	IRON	44 101.07	Ru	RUTHENIUM	75 186.21 76 190.23	Os	OSMIUM	108 (277)		HASSIUM
T		13	5 10.811	8	BORON		7	25 54.938	Mn	MANGANESE	(98)	Ŋ	TECHNETIUM	75 186.21	Re	RHENIUM	107 (272)	B	BOHRIUM
<u>C</u>	GROUP NUMBERS IUPAC RECOMMENDATION (1985)	(G	ATOMIC NUMBER —	SYMBOL —			9	23 50.942 24 51.996	Cr	CHROMIUM	42 95.95	Mo	MOLYBDENUM	74 183.84	*	TUNGSTEN	106 (271)	51 V2	SEABORGIUM
	GROUP N UPAC RECON	3	ATOMIC				5	23 50.942	>	VANADIUM	41 92.906	S	NIOBIUM	73 180.95	Та	TANTALUM	105 (268)		DUBNIUM
PERIODIC	П						4	22 47.867	Ë	TITANIUM	40 91.224	Zr	ZIRCONIUM	72 178.49	Ht	HAFNIUM	89-103 104 (267) 105 (268) 106 (271)		RUTHERFORDIUM
Б							3	21 44.956	Sc	SCANDIUM	39 88.906	Τ	YTTRIUM	57-71	La-Lu	Lanthanide		Ac-Lr	Actinide
	2	4 9.0122	Be	BERYLLIUM	11 22.990 12 24.305	Mg	MAGNESIUM	19 39.098 20 40.078 21 44.956	Ca	CALCIUM	38 87.62	\mathbf{Sr}	STRONTIUM	56 137.33	Ba	BARIUM	(223) 88 (226)	Ra	RADIUM
GROUP 1	HYDROGEN	3 6.94	Ľ	LITHIUM	11 22.990	Na	MUIGOS	19 39.098	Y	POTASSIUM	37 85.468	Rb	RUBIDIUM	55 132.91	Cs	CAESIUM	87 (223)	Fr	FRANCIUM
	_		7			3			4	_		S			9			7	

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LAWRENCIUM 71 174.97 103 (262) LUTETIUM 69 168.93 70 173.05 101 (258) 102 (259) NOBELIUM MENDELEVIUM THULIUM **65** 158.93 **66** 162.50 **67** 164.93 **68** 167.26 99 (252) 100 (257) FERMIUM ERBIUM \mathbf{Er} BERKELIUM CALIFORNIUM EINSTEINIUM HOLMIUM H_0 (251) DYSPROSIUM Dy 86 97 (247) TERBIUM 95 (243) 96 (247) GADOLINIUM CURIUM <u>G</u> AMERICIUM EUROPIUM Am Eu 94 (244) PLUTONIUM SAMARIUM Sm NEPTUNIUM PROMETHIUM 93 (237) 92 238.03 NEODYMIUM URANIUM Nd PRASEODYMIUM 91 231.04 PROTACTINIUM 90 232.04 CERIUM THORIUM LANTHANIDE LANTHANUM 89 (227) ACTINIDE ACTINIUM La Ac

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(1) Atomic weights of the elements 2013, Pure Appl. Chem., 88, 265-291 (2016)