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Chem practice exam

General Descriptive Chemistry I (University of North Carolina at Chapel Hill)

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Name (Last, First): _____ **ONYEN:**_____

Instructor: O **Bliem** O **Curtis** O **Dempsey** O **Fostvedt**

Exam Classroom: _____

General Descriptive Chemistry 101 Exam I

DO NOT OPEN OR WRITE ANYTHING UNTIL INSTRUCTED TO DO SO

Instructions:

1. Write your name and ONYEN (e.g., bliem) above.
2. Write your ONYEN at the top of each page.
3. Read each question carefully.
4. Multiple-choice/many-select questions can be answered in pencil.
5. For many-select questions, mark "x" in checkboxes (no stray marks).
6. All other questions must be written in pen.
7. SHOW YOUR WORK with correct units and sig figs. Partial credit based on work shown.
8. Use the periodic table.
9. Double-check your calculations.
10. **ANSWERS** MUST BE **PLACED IN** THE **BOXES or LINES** (including CORRECT UNITS and sig figs).
11. Do not leave any answers blank.
12. **Read and sign the honor pledge when, and only when, you finish taking the exam.**
13. **As part of the Honor Code, you may not discuss contents of this exam with peers before noon, Wednesday, 2/16/22.**
14. Return *all* pages when you complete the exam.
15. Relax. You've got this.

Ho or Pledge: By sig i g below, I pledge that I have ot violated the UNC Ho or Code by receivi g or givi g u authorized assista ce o this exam. If I do ot sig , the I ack owledge that I was ot ho orable i taki g the exam a d u dersta d that it will simply ot be graded, o questio s asked.

_____

(Sig ature)

101A

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Periodic Table of the Elements

THE UNIVERSITY of NORTH CAROLINA at CHAPEL HILL

1A 1												3A 13	4A 14	5A 15	6A 16	7A 17	8A 18
1 H 1.008	2A 2																2 He 4.003
3 Li 6.941	4 Be 9.012											5 B 10.81	6 C 12.01	7 N 14.01	8 O 16.00	9 F 19.00	10 Ne 20.18
11 Na 22.99	12 Mg 24.31	3B 3	4B 4	5B 5	6B 6	7B 7	8	8B 9	10	1B 11	2B 12	13 Al 26.98	14 Si 28.09	15 P 30.97	16 S 32.07	17 Cl 35.45	18 Ar 39.95
19 K 39.10	20 Ca 40.08	21 Sc 44.96	22 Ti 47.87	23 V 50.94	24 Cr 52.00	25 Mn 54.94	26 Fe 55.85	27 Co 58.93	28 Ni 58.69	29 Cu 63.55	30 Zn 65.39	31 Ga 69.72	32 Ge 72.64	33 As 74.92	34 Se 78.96	35 Br 79.90	36 Kr 83.80
37 Rb 85.47	38 Sr 87.62	39 Y 88.91	40 Zr 91.22	41 Nb 92.91	42 Mo 95.94	43 Tc 98.00	44 Ru 101.1	45 Rh 102.9	46 Pd 106.4	47 Ag 107.9	48 Cd 112.4	49 In 114.8	50 Sn 118.7	51 Sb 121.8	52 Te 127.6	53 I 126.9	54 Xe 131.3
55 Cs 132.9	56 Ba 137.3	57 - 71	72 Hf 178.5	73 Ta 180.9	74 W 183.8	75 Re 186.2	76 Os 190.2	77 Ir 192.2	78 Pt 195.1	79 Au 197.0	80 Hg 200.6	81 Tl 204.4	82 Pb 207.2	83 Bi 209.0	84 Po 209.0	85 At 210.0	86 Rn 222.0
87 Fr 223.0	88 Ra 226.0	89 - 103	104 Rf 261.1	105 Db 262.1	106 Sg 266.1	107 Bh 264.1	108 Hs 269.1	109 Mt 268.1	110 Ds 281	111 Rg 272	112 Cn 285	113 Nh 286	114 Fl 289	115 Mc 289	116 Lv 293	117 Ts 294	118 Og 294

57 La 138.9	58 Ce 140.1	59 Pr 140.9	60 Nd 144.2	61 Pm 145.0	62 Sm 150.4	63 Eu 152.0	64 Gd 157.3	65 Tb 158.9	66 Dy 162.5	67 Ho 164.9	68 Er 167.3	69 Tm 168.9	70 Yb 173.0	71 Lu 175.0
89 Ac 227.0	90 Th 232.0	91 Pa 231.0	92 U 238.0	93 Np 237.1	94 Pu 244.1	95 Am 243.1	96 Cm 247.1	97 Bk 247.1	98 Cf 251.1	99 Es 252.1	100 Fm 257.1	101 Md 258.1	102 No 259.1	103 Lr 262.1

Designed by Chris Davis & Todd Austell

$1\ mL = 1\ cm^3$

$1\ Å = 10^{-10}\ m$

$c = \lambda\nu = 2.998 \times 10^8\ m/s$

$h = 6.626 \times 10^{-34}\ J{\cdot}s$

$E = h\nu$

$1\ mole = 6.022 \times 10^{23}\ things$

$1\ u = 1.6606 \times 10^{-24}\ g$

$1\ proton = 1.0073\ u$

$1\ Hz = 1\ s^{-1} = 1/s$

$1\ neutron = 1.0087\ u$

$$\Delta E = -hcR_H\left(\frac{1}{n_f^2} - \frac{1}{n_i^2}\right) \text{ where } hcR_H = 2.18 \times 10^{-18}\ J$$

$$\lambda = \frac{h}{mv}$$

$$E_{el} = = \frac{\kappa Q_1 Q_2}{d}$$

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