Grossmont College

Periodic Table

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| IA |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  | VIIA | NOBLE GASES |
| 1  **H**  1.008 | IIA |  |  |  |  |  |  |  |  |  | |  | IIIA | IVA | VA | VIA | 1  **H**  1.008 | 2  **He**  4.002 |
| 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**  23.00 | 12  **Mg**  24.30 | IIIB | IVB | VB | VIB | VIIB | VIII VIII VIII | | | | IB | IIB | 13  **Al**  27.00 | 14  **Si**  28.09 | 15  **P**  30.97 | 16  **S**  32.06 | 17  **Cl**  35.45 | 18  **Ar**  39.95 |
| 19  **K**  39.10 | 20  **Ca**  40.08 | 21  **Sc**  44.96 | 22  **Ti**  47.90 | 23  **V**  50.94 | 24  **Cr**  52.00 | 25  **Mn**  54.94 | 26  **Fe**  55.85 | 27  **Co**  58.93 | 28  **Ni**  58.70 | | 29  **Cu**  63.55 | 30  **Zn**  65.38 | 31  **Ga**  69.72 | 32  **Ge**  72.59 | 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**  (99) | 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  **La**  138.9 | 72  **Hf**  178.5 | 73  **Ta**  180.9 | 74  **W**  183.9 | 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) | 85  **At**  (210) | 86  **Rn**  (222) |
| 87  **Fr**  (223) | 88  **Ra**  226.0 | 89  **Ac**  227.0 | 104  **Rf**  (261) | 105  **Db**  (262) | 106  **Sg**  (263) | 107  **Bh**  (262) | 108  **Hs**  (265) | 109  **Mt**  (266) | 110  **??**  (269) |  | |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 58  **Ce**  140.1 | 59  **Pr**  140.9 | 60  **Nd**  144.2 | 61  **Pm**  (147) | 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 |
| 90  **Th**  232.0 | 91  **Pa**  231.0 | 92  **U**  238.0 | 93  **Np**  (237) | 94  **Pu**  (244) | 95  **Am**  (243) | 96  **Cm**  (247) | 97  **Bk**  (247) | 98  **Cf**  (251) | 99  **Es**  (252) | 100  **Fm**  (257) | 101  **Md**  (258) | 102  **No**  (259) | 103  **Lr**  (260) |

Chem 116 EXAM 2 Summer 2009

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_Instructor: Martin Larter

Last First

Page 2 (19 points)

Page 3 (24 points)

Page 4 (24 points)

Page 5 (25 points)

Page 6 (13 points)

Extra Credit \_\_\_\_\_\_\_\_\_\_\_\_ (4 points)

Total (105 points)

Percent (100 %)

The following tables may be useful for some of the questions below

Extra Credit: Draw in chair form the disaccharide of lactose (galactose, glucose) (4 pts)

1. Label the **five functional groups** on this molecule including acetals, hemiacetals, ketals and hemiketals as well as primary, secondary and tertiary where appropriate. (5 pts)



1. Define “meso compound” using words and a structure. (4pts)
2. Shown below is the structure of prostaglandin (-)-PGE2 Mark each stereocenter in the following molecule with an asterisk (\*) ( 6 pts)



1. The total number of stereocenters in (-)-PGE2 is \_\_\_\_\_\_\_\_\_\_\_
2. The total number of stereoisomers for this molecule is \_\_\_\_\_\_\_\_
3. What does the (-) mean (define term) in this compound’s name?

(-) Refers to an optically active

1. Draw the structure for each of the following names (6 pts)

Potassium benzoate cis-4, 5-dimethyl-2-octendial cyclohexyl-β-D-galactopyranoside

1. For the following compounds (9 pts)



If there is no pairs of any of the following below write “none”.

List all pairs of enantiomers. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

List all pairs of diasteromers. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

List all pairs that are identical \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



1. Name the following molecules (12 pts)



Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



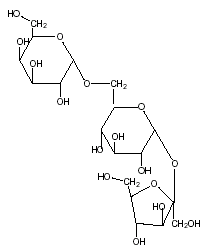


Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Complete the reactions drawn by filling in either the reactant or the products. If there is more than one product, draw only the **major product.** If there is no reaction write **NR** (16 pts)



1. Explain the term **mutarotation** and draw an example of this using D-Idose. Please name each structure. (8pts)
2. The structure of raffinose, a trisaccharide found in some plants, is shown below



1. Write the **fisher structure** of the monosaccharides resulting from the acid hydrolysis of raffinose and **name** each (9 pts)
2. Point an arrow to each glycosidic bond and identify its type (example β1,4) (4 pts)
3. Is raffinose a reducing sugar? Why (3 pts)
4. Below each of the following structures, write **all** of the appropriate terms from the list: triose, tetrose, pentose, hexose, heptose aldose, ketose, pyranose, furanose, “α”, “β”, deoxy, alditol, aldonic acid, uronic acid, D,L (9 pts)

1. Which has the higher boiling point, ethanol or acetic acid? Explain, using drawings to illustrate your answer. (4 pts)
2. Explain from a structural prospective why amylose turns blue black when exposed to potassium iodide but dextrin remains brown (define any terms necessary to explain this concept, assume the person you are talking to does not have much chemistry knowledge)? (4 pts)
3. Determine the acidity of the following molecules (6 pts)

a)



1. Rank the following molecules in terms of solubility in water explain your reasoning (6 pts)



Explain

1. Definitions (5 pts)
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are molecules whose atomic connectivity is the same but whose atomic arrangement in space is different.
3. A compound is said to be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ if it rotates the plane of polarized light.
4. A disaccharide contains two monosaccharide units joined by a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_
5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a pair of cyclic stereoisomers of a sugar or glycoside, differing only in configuration at the hemiacetal or hemiketal
6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_polysaccharide of glucose that is connected beta 1,4