Quiz VI General Chemistry I Lecture Spring 15 Dr. Hahn 20 pts 4/2 R 8:30am form A quiz # ____

Name Key (print name) Name _____ (sign name) blue

Please show all work for full credit and for partial credit.

1 If you have principal quantum number n = 5, what are the possible angular momentum quantum numbers (ℓ)? (6 pts)

$\ell = 0, \ldots n-1$ $\quad n-1 = 4$

$\ell = 0, 1, 2, 3, 4$

2. For the symbol to represent an electron configuration, (circle one under each letter) (6 pts)

$3p^4$ a) 3 represents (period number) (angular momentum quantum number)

b) the p represents (angular momentum quantum number) (shell number)

c) the 4 represents (period number) (number of electrons within 3 p)

3. For the element **F** give the electron configuration in the format ($1s^2$, $2s^2$, $2p^6$, ...)

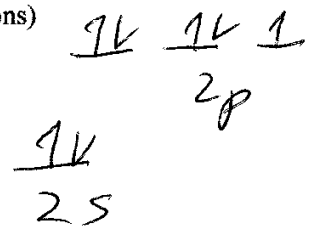
$1s^2, 2s^2, 2p^5$

Extra Credit: For the same element (2 pts, 1 pt per letter)

a) Give the **valence** electron configuration for the element in # 3 above, in the same format.

$2s^2, \quad 2p^5$

b) Give the **valence orbital diagram** for the same element (in the format $\uparrow\downarrow$ $\uparrow\downarrow$.... using up and down arrows to represent electrons) 1s 2s



Quiz VI General Chemistry I Lecture Spring 15 Dr. Hahn 20 pts 4/2 R 8:30am form B quiz # _____

Name Key (print name) Name _____ (sign name) Salman

Please show all work for full credit and for partial credit.

1 If you have angular momentum quantum number (ℓ) = 2, what are the possible magnetic quantum numbers (m_ℓ) ? (6 pts) $\ell = 2$, $m_\ell = -\ell, \ldots 0, \ldots +\ell$

$m_\ell = -2, -1, 0, +1, +2$

2. For the symbol to represent an electron configuration, (circle one under each letter) (6 pts)

$4\,s^2$ a) the 2 represents (period number) (number of electrons within 4s)

b) 4 represents (period number) (angular momentum quantum number)

c) the s represents (angular momentum quantum number) (shell number)

3. For the element **Zr** give the electron configuration in the format ($1s^2$, $2s^2$, $2p^6$, ...)

$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2, 4d^2$

Extra Credit: For the same element (2 pts, 1 pt per letter)

a) Give the **valence** electron configuration for the elemenet in # 3 above, in the same format.

$5s^2, 4d^2$

b) Give the **valence orbital diagram** for the same element (in the format $\uparrow\downarrow$ $\uparrow\downarrow$.... using up and down arrows to represent electrons)

1s 2s

$\uparrow\downarrow$ $\uparrow\downarrow$ — — — —

4d

$\uparrow\downarrow$

5s

Quiz VI General Chemistry I Lecture Spring 15 Dr. Hahn 20 pts 4/2 R 9:55 am form A quiz # _____

Name (print name) key Name (sign name) yellow

Please show all work for full credit and for partial credit.

1. There is one error in the quantum number to describe a single electron ? Explain. (6 pts)

$n = 2, \ell = 2, m_\ell = -2, m_s = +\frac{1}{2}$ $n = 2 \rightarrow \ell = 0, \ldots n-1 = 0, 1 = \ell$

not allowed

2. a. Each orbital can hold a maximum of 2 electrons (3 pts)

   b. Principal quantum number is found on the periodic table as the [(group) or (period)] (circle one) number (3 pts)

3. For the element **Te** give the electron configuration in the format ($1s^2$, $2s^2$, $2p^6$, ...)

Te has 52 ~~electrons~~ $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2, 4d^{10}, 5p^4$

Extra Credit: For the same element (2 pts, 1 pt per letter)

a) Give the **valence** electron configuration for the elemenet in # 3 above, in the same format.

$5s^2, 5p^4$

b) Give the **valence orbital diagram** for the same element (in the format $\underset{1s}{\uparrow\downarrow}$ $\underset{2s}{\uparrow\downarrow}$.... using up and down arrows to represent electrons)

$\uparrow\downarrow$ $\uparrow$ $\uparrow$ (5p)

$\uparrow\downarrow$ (5s)

Quiz VI General Chemistry I Lecture Spring 15 Dr. Hahn 20 pts 4/2 R 9:55 am form B quiz # _____

Name (print name) Key Name (sign name) Green

Please show all work for full credit and for partial credit.

1. There is one error in the quantum number to describe a single electron? Explain. (6 pts)

$n = 3, \ell = 2, m_\ell = 3, m_s = +\frac{1}{2}$

$n=3 \rightarrow \ell = 0, 1, 2$

$m_\ell = -\ell, \ldots 0 \ldots +\ell = -2, -1, 0, +1, +2$ not allowed

2. a. The p subshell can hold a maximum of 6 electrons (3 pts)

b. Give the symbol of one element in the f block (3 pts)

Th → Lr etc. Gd, Ce, Lu,

3. For the element **Cu** give the electron configuration in the format ($1s^2$, $2s^2$, $2p^6$, ...)

Cu has 29 total e

$1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}$,

$3d^9$ (better is $4s^1, 3d^{10}$)

Extra Credit: For the same element (2 pts, 1 pt per letter)

a) Give the **valence** electron configuration for the element in # 3 above, in the same format.

$4s^2, 3d^9$ or $4s^1 3d^{10}$

b) Give the **valence orbital diagram** for the same element (in the format $\underset{1s}{\uparrow\downarrow}$ $\underset{2s}{\uparrow\downarrow}$.... using up and down arrows to represent electrons)

↑↓ ↑↓ ↑↓ ↑↓ ↑↓

1

4s

Quiz VI General Chemistry I Lecture Spring 15 Dr. Hahn 20 pts 4/2 R 8:30am form A quiz # _____

Name _____ Name _____
(print name) (sign name)

Please show all work for full credit and for partial credit.

1 If you have principal quantum number n = 5, what are the possible angular momentum quantum numbers (ℓ)? (6 pts)

2. For the symbol to represent an electron configuration, (circle one under each letter) (6 pts)

$3p^4$ a) 3 represents (period number) (angular momentum quantum number)

b) the p represents (angular momentum quantum number) (shell number)

c) the 4 represents (period number) (number of electrons within 3 p)

3. For the element **F** give the electron configuration in the format ($1s^2$, $2s^2$, $2p^6$, ...)

Extra Credit: For the same element (2 pts, 1 pt per letter)

a) Give the **valence** electron configuration for the element in # 3 above, in the same format.

b) Give the **valence orbital diagram** for the same element (in the format $\uparrow\downarrow$ $\uparrow\downarrow$.... using up and down arrows to represent electrons) 1s 2s

Quiz VI General Chemistry I Lecture Spring 15 Dr. Hahn 20 pts 4/2 R 8:30am form B quiz # _____

Name _____ Name _____
(print name) (sign name)

Please show all work for full credit and for partial credit.

1 If you have angular momentum quantum number (ℓ) = 2, what are the possible magnetic quantum numbers (m_ℓ) ? (6 pts)

2. For the symbol to represent an electron configuration, (circle one under each letter) (6 pts)

$4s^2$ a) the 2 represents (period number) (number of electrons within 4s)

b) 4 represents (period number) (angular momentum quantum number)

c) the s represents (angular momentum quantum number) (shell number)

3. For the element **Zr** give the electron configuration in the format ($1s^2$, $2s^2$, $2p^6$, ...)

Extra Credit: For the same element (2 pts, 1 pt per letter)

a) Give the **valence** electron configuration for the elemenet in # 3 above, in the same format.

b) Give the **valence orbital diagram** for the same element (in the format $\underset{1s}{\uparrow\downarrow}$ $\underset{2s}{\uparrow\downarrow}$.... using up and down arrows to represent electrons)

Quiz VI General Chemistry I Lecture Spring 15 Dr. Hahn 20 pts 4/2 R 9:55 am form A quiz # 1-4

Name _____ Name _____
(print name) (sign name)

Please show all work for full credit and for partial credit.

1. There is one error in the quantum number to describe a single electron ? Explain. (6 pts)

$n = 2, \ell = 2, m_\ell = -2, m_s = +\frac{1}{2}$

2. a. Each orbital can hold a maximum of _____ electrons (3 pts)

   b. Principal quantum number is found on the periodic table as the [(group) or (period)] (circle one) number (3 pts)

3. For the element **Te** give the electron configuration in the format ($1s^2$, $2s^2$, $2p^6$, ...)

Extra Credit: For the same element (2 pts, 1 pt per letter)

a) Give the **valence** electron configuration for the elemenet in # 3 above, in the same format.

b) Give the **valence orbital diagram** for the same element (in the format $\uparrow\downarrow$ $\uparrow\downarrow$.... using up and down arrows to represent electrons)
1s 2s

Quiz VI General Chemistry I Lecture Spring 15 Dr. Hahn 20 pts 4/2 R 9:55 am form B quiz # 1-10

Name _____ Name _____
(print name) (sign name)

Please show all work for full credit and for partial credit.

1. There is one error in the quantum number to describe a single electron ? Explain. (6 pts)

$n = 3, \ell = 2, m_\ell = 3, m_s = +½$

2. a. The p subshell can hold a maximum of _____ electrons (3 pts)

   b. Give the symbol of one element in the f block (3 pts)

3. For the element **Cu** give the electron configuration in the format ($1s^2$, $2s^2$, $2p^6$, ...)

Extra Credit: For the same element (2 pts, 1 pt per letter)

a) Give the **valence** electron configuration for the element in # 3 above, in the same format.

b) Give the **valence orbital diagram** for the same element (in the format ↑↓ ↑↓.... using up and down arrows to represent electrons)
1s 2s