

**Chemistry Department**

Quiz #6 Form A  **Chemistry 141** 05.04.2018

Student Name: \_\_\_\_\_\_\_\_\_\_\_\_ Student No:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Section\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Please read the questions carfully and choose the best fit answer:**

**1) Any object (including atoms) can absorb or emit only certain quantities of energy, this statement was proposed by? (1 point)**

 A) Planck B) Einstein C) Compton D) Rydberg E) Bohr

**2) If the energy of a photon is 2.32 × 10-18 J, what is its wavelength in nm? (1 point)**

A) 8.57 × 10-8 nm B) 85.7 nm

 C) 8.57 × 10-8 m D) 0.857 × 10-7 m

**3) Use the Rydberg equation to calculate the wavelength of a photon released when the hydrogen atom undergoes a transition from n = 4 to n = 2. (R = 1.097 × 107 m-1) (1 point)**

A) 0.2057 × 107 nm B) 4.862 × 10-7 m

 C) 4.862 × 10-7 nm D) > 1019 nm

**4) The Bohr Theory predicts the energy difference (in J) for the lithium ion (Li+2) between the n = 3 and the n = 5 state to be (2 points)**

 A) 3.68 × 10-18 J B) 1.55 × 10-19 J

 C) 1.36 ×10-19 J D) 1.40 × 10-18 J

**5) Find the de Broglie wavelength of an electron with a speed of 1.00x107 m/s (electron mass = 9.11x10−28g; h = 6.626x10−34 kg∙m2/s). (1 point)**

 A) 7.27 × 10-11 nm B) 7.27x10−11 m

 C) 7.27 × 10-8 nm D) 7.27 × 10-8 m

**6) Which of the following is a correct set of quantum numbers for an electron in a 4*d* orbital? (1 point)**

 A) *n* = 6, *l* = 2, *ml* = +*1 B) n = 4, l = 2, ml = +1*

 C) *n* = 4, *l* = 1, *ml* = +3 D) *n* = 4, *l* = 4, *ml* = 3

 E) *n* = 4, *l* = 1, *ml* = 0

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**Chemistry Department**

Quiz #6 Form B  **Chemistry 141** 05.04.2018

**Student Name: \_\_\_\_\_\_\_\_\_\_\_\_ Student No:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Section\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Please read the questions carfully and choose the best fit answer:**

**1) The H atom has only certain energy levels, which was called *stationary states*, this statement was proposed by? (1 point)**

 A) Planck B) Einstein C) Compton D) Rydberg E) Bohr

**2) If the energy of a photon is 3.32 × 10-18 J, what is its wavelength in nm? (1 point)**

A) 5.99 × 10-8 nm B) 5.99 × 10-8 m

 C) 59.9 nm D) 0.599 × 10-7 m

**3) Use the Rydberg equation to calculate the wavelength of a photon released when the hydrogen atom undergoes a transition from n = 6 to n = 3. (R = 1.097 × 107 m-1) (1 point)**

A) 0.09142 × 107 nm B) 10.94 × 10-7 nm

 C) 10.94 × 10-7 m D) > 1019 nm

**4) The Bohr Theory predicts the energy difference (in J) for the lithium ion (Li+2) between the n = 2 and the n = 4 state to be (2 points)**

 A) 3.68 × 10-18 J B) 1.55 × 10-19 J

 C) 1.36 × 10-19 J D) 1.40 × 10-18 J

**5) Find the de Broglie wavelength of an electron with a speed of 1.00x108 m/s (electron mass = 9.11x10−28g; h = 6.626x10−34 kg∙m2/s). (1 point)**

 A) 7.27 × 10-9 nm B) 7.27 × 10-9 nm

 C) 7.27 × 10-12 nm D) 7.27 x 10−12 m

**6) Which of the following is a correct set of quantum numbers for an electron in a 5d orbital? (1 point)**

 A) *n* = 6, *l* = 3, *ml* = +1 B) *n* = 5, *l* = 5, *ml* = +6

 C) *n* = 5, *l* = 2, *ml* = +1 D) *n* = 5, *l* = 4, *ml* = 3

 E) *n* = 4, *l* = 3, *ml* = 0

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**Chemistry Department**

Quiz #6 Form C  **Chemistry 141** 05.04.2018

**Student Name: \_\_\_\_\_\_\_\_\_\_\_\_ Student No:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Section\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Please read the questions carfully and choose the best fit answer:**

**1) Uncertainty Principle states that it is not possible to know both the position *and* momentum of a moving particle at the same time, this statement was proposed by? (1 point)**

 A) Planck B) Einstein C) Heisenberg D) Rydberg E) Bohr

**2) If the energy of a photon is 6.64 × 10-18 J, what is its wavelength in nm? (1 point)**

 A) 29.9 nm B) 0.299 × 10-7 m

 C) 2.99 × 10-8 nm D) 2.99 × 10-8 m

**3) Use the Rydberg equation to calculate the wavelength of a photon released when the hydrogen atom undergoes a transition from n = 5 to n = 1. (R = 1.097 × 107 m-1) (1 point)**

A) 1.05 × 107 nm B) 9.50 × 10-8 nm

 C) 9.50 × 10-8 m D) > 1019 nm

**4) The Bohr Theory predicts the energy difference (in J) for the lithium ion (Li+2) between the n = 1 and the n = 2 state to be (2 points)**

 A) 14.7 × 10-18 J B) 1.55 × 10-19 J

 C) 1.36 × 10-19 J D) 1.40 × 10-18 J

**5) Find the de Broglie wavelength of an electron with a speed of 1.00x109 m/s (electron mass = 9.11x10−28g; h = 6.626x10−34 kg∙m2/s). (1 point)**

 A) 7.27 × 10-13 m B) 7.27 × 10-10 nm

 C) 7.27 × 10-13 nm D) 7.27 x 10−10 m

**6) Which of the following is a correct set of quantum numbers for an electron in a 4d orbital? (1 point)**

 A) *n* = 6, *l* = 3, *ml* = +1 B) *n* = 5, *l* = 5, *ml* = +6

 C) *n* = 5, *l* = 2, *ml* = +1 D) *n* = 5, *l* = 4, *ml* = 3

 E) *n* = 4, *l* = 2, *ml* = 0

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