

Chemistry 1110
 Fall 2001
 Test #3
 Answers

1)

- a) 1.243×10^{15} Hz
- b) UV, not visible

2) 72.9 days

3) Be^{+3}

4)

n	ℓ	m_ℓ	m_s	reason (if impossible)
1	0	0	0	m_s cannot be integer
3	2	3	-1/2	m_ℓ cannot be greater than ℓ
5	5	5	-1/2	ℓ cannot be equal to n
7.5	6	5	+1/2	n must be an integer

5)

- a) 18
- b) 0
- c) 12
- d) 400

6)

- a) Cu
- b) O^{-2}
- c) Y^{+3}
- d) Ca^{+}

7)

atom/ion	configuration	ground state configuration
Cl^-	$[\text{Ne}]3s^23d^6$	$[\text{Ar}]$
Cr	$[\text{Ar}]4s^23d^4$	$[\text{Ar}]4s^13d^5$
Se	$[\text{Ar}]4s^24d^{10}4p^4$	$[\text{Ar}]4s^23d^{10}4p^4$
V^{3+}	$[\text{Ar}]4s^2$	$[\text{Ar}]3d^2$

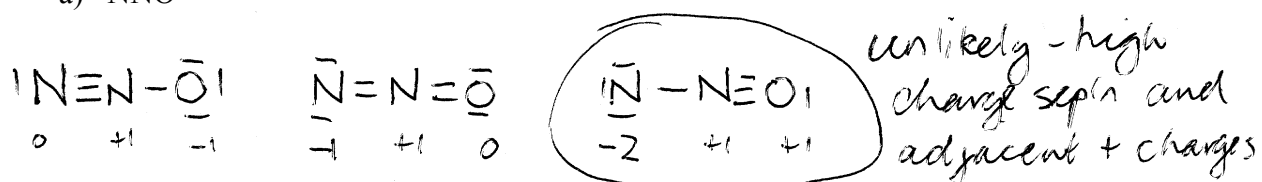
8) Li and Na

9)

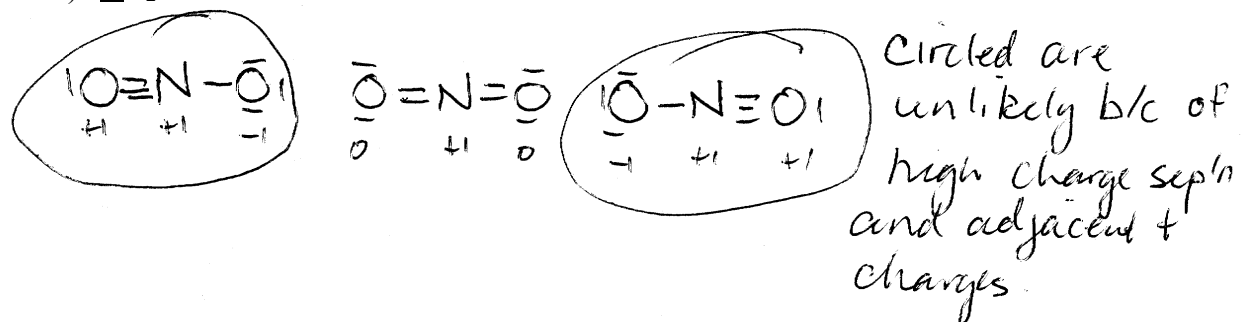
Smallest radius		F ⁻
Largest radius	Ne	
Highest 1 st IP		N
Highest 2 nd IP		Mg ⁻
Most unpaired electrons	N ⁻	
Largest atomic radius		Y
Most electronegative	O	
Impossible subshell designation	3f	
Most paramagnetic		N
lowest E _a		Fe

10)

a) NNO



b) NO₂⁺



c) CNO⁻

