

Atomic Theory/Waves/Electrons Key

1c

1. G
2. A
3. C
4. E
5. D
6. C
7. D
8. G
9. C
10. F
11. D

2c

1. A
2. A
3. B
4. A + B
5. A
6. C
7. A + B
8. A + B
9. C
10. 2A + 2B

3c

1. Violet
2. Red
3. violet

4C) 1. $\nu = 3.21 \times 10^5 \text{ KHz} = 3.21 \times 10^8 \text{ Hz}$

$$c = \lambda \nu$$

$$\lambda = \frac{c}{\nu} = \frac{3.00 \times 10^8 \text{ m/s}}{3.21 \times 10^8 \text{ Hz}} = 0.935 \text{ m}$$

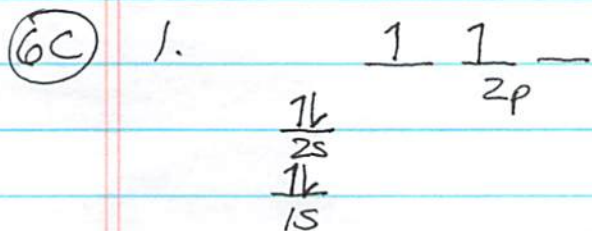
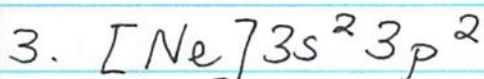
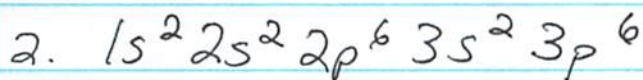
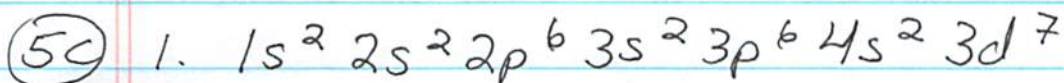
2. $E = 4.55 \times 10^3 \text{ J}$

$$E = h\nu$$

$$\nu = \frac{E}{h} = \frac{4.55 \times 10^3 \text{ J}}{6.63 \times 10^{-34} \text{ J}\cdot\text{s}} = 6.86 \times 10^{36} \text{ Hz}$$

$$c = \lambda \nu$$

$$\lambda = \frac{c}{\nu} = \frac{3.00 \times 10^8 \text{ m/s}}{6.86 \times 10^{36} \text{ Hz}} = 4.37 \times 10^{-29} \text{ m}$$

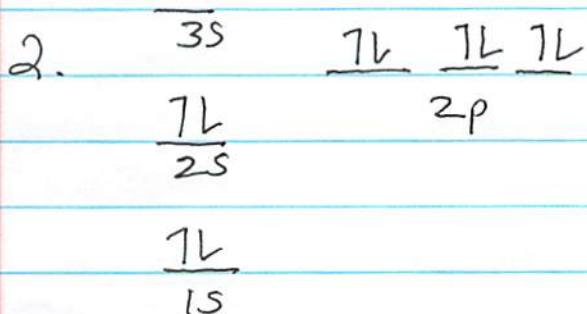


A: Filled up lowest energy orbitals first

B: Put an electron in each orientation of the 2p (degenerate) orbital before pairing up

6c cont.

C: Electrons in the same orientation have opposite spins



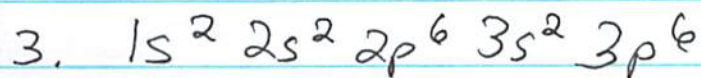
7c 1. Ca

2. 1st: 2 electrons

2nd: 8 electrons

3rd: 8 electrons

4th: 2 electrons



Cation

$2+$