

12. How many electronic transitions between the following energy levels would be expected for Lyman and Paschen series?



|    | Lyman Series | Paschen Series |
|----|--------------|----------------|
| A. | 5            | 3              |
| B. | 5            | 2              |
| C. | 4            | 3              |
| D. | 5            | 4              |

13. Calculate the wavelength in nm of the second line in Lyman series.

- A.  $1.026 \times 10^{-16}$  nm  
 B.  $1.026 \times 10^2$  nm  
 C.  $9.75 \times 10^6$  nm  
 D.  $975 \times 10^{-3}$  nm

14. Q is an element with proton number of 21. Write the electronic configuration of Q.

- A.  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$   
 B.  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^1$   
 C.  $1s^2 2s^2 2p^6 3s^2 3p^1$   
 D.  $1s^2 2s^2 2p^6 3s^2 3p^6 3d^1$

15. Give a set of quantum numbers for the electrons that occupy the fourth shell in Scandium (Sc).

- A.  $n=3, l=1, m=0, s=+1$   
 B.  $n=3, l=1, m=1, s=-\frac{1}{2}$   
 C.  $n=4, l=0, m=1, s=+\frac{1}{2}$   
 D.  $n=4, l=0, m=0, s=-\frac{1}{2}$

16. Given the set of quantum number for the highest energy electron in atom X.

$$n=4, l=1, m=0, s=+\frac{1}{2}$$

Write the electronic configuration of X.

- A.  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^2$   
 B.  $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4p^{21}$   
 C.  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^1$   
 D.  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 4p^1$

17. Give a set of quantum number of one valence electron in the s orbital of arsenic, As.

- A.  $n=4, l=0, m=1, s=-\frac{1}{2}$   
 B.  $n=4, l=1, m=0, s=+1$   
 C.  $n=4, l=0, m=0, s=-1$   
 D.  $n=4, l=0, m=0, s=-\frac{1}{2}$

18. The proton number of copper (Cu) is 29. Write the valence electronic configuration of the copper atom.

- A.  $4s^2 3d^{10}$       C.  $4s^2 3d^8$   
 B.  $4s^1 3d^{10}$       D.  $3d^{10} 4s^2$

19. Nickel has 28 protons. Give a set of possible quantum number for the electron with the highest energy in  $Ni^{2+}$  ion.

- A.  $n=3, l=2, m=-1, s=-\frac{1}{2}$   
 B.  $n=3, l=1, m=-1, s=+\frac{1}{2}$   
 C.  $n=4, l=0, m=-1, s=+\frac{1}{2}$   
 D.  $n=4, l=0, m=0, s=-\frac{1}{2}$

20. Ion that have the similar electronic configuration with  $_{10}Ne$  is;

- A.  $O^{2+}$       C.  $N^{3-}$   
 B.  $Mg^{2+}$       D.  $Cl^-$