**Atomic Structure – Homework 3 (Ans)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1. |  | 1s |  | 2s |  |  | 2p |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | ↑↓ |  | ↑↓ |  | ↑ | ↑ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2. |  | 1s |  | 2s |  |  | 2p |  |  | 3s |  |  | 3p |  |  | 4s |  |  |  | 3d |  |  |
|  |  | ↑↓ |  | ↑↓ |  | ↑↓ | ↑↓ | ↑↓ |  | ↑↓ |  | ↑↓ | ↑↓ | ↑↓ |  | ↑ |  | ↑↓ | ↑↓ | ↑↓ | ↑↓ | ↑↓ |
| 3. |  | 1s |  | 2s |  |  | 2p |  |  | 3s |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | ↑↓ |  | ↑↓ |  | ↑↓ | ↑↓ | ↑↓ |  | ↑ |  |  |  |  |  |  |  |  |  |  |  |  |

4. 1s22s22p6 5. 1s22s22p63s23p6 6. 1s22s22p63s23p6

7. 1s22s22p63s23p63d5 8. 1s22s22p63s23p63d5 9. 1s22s22p63s23p63d2

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 10. |  |  |  | 3s |  |  | 3p |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | [Ne] |  | ↑↓ |  | ↑↓ | ↑↓ | ↑↓ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11. |  |  |  | 4s |  |  |  | 3d |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | [Ar] |  | ↑↓ |  | ↑↓ | ↑ | ↑ | ↑ | ↑ |  |  |  |  |  |  |  |  |  |  |  |  |
| 12. |  |  |  | 4s |  |  |  | 3d |  |  |  |  | 4p |  |  |  |  |  |  |  |  |  |
|  |  | [Ar] |  | ↑↓ |  | ↑↓ | ↑↓ | ↑↓ | ↑↓ | ↑↓ |  | ↑↓ | ↑↓ | ↑ |  |  |  |  |  |  |  |  |

13. [Ar]4s13d5 14. [Ar]3d10 15. [Xe] 6s24f145d10

16. Number of protons increases, shielding stays the same, so attraction of outer electrons to nucleus increases

17. Outermost electron in B is 2p, outermost electron in Be is 2s, 2p electron in B better shielded than 2s electron in Be, so it is less attracted to nucleus

18. 2p electron is paired in O but unpaired in N, so in O there is more repulsion in the orbital which makes the electron easier to remove

19. More shells, so more shielding, so attraction of outer electrons to the nucleus decreases

20. No shielding in 1st period so electrons closely held than in other periods, and more protons than hydrogen so greater attraction to nucleus

21. Less electrons, so less electron repulsion

22. 1st electron removed from 3s, second electron removed from 2p so much less shielding

23. Number of protons increases, shielding stays the same, so attraction of outer electrons to nucleus increases and they move closer

24. More shells, so more shielding, so attraction of outer electrons to the nucleus decreases and they are pushed further away

25. Less electrons, so less repulsion, so electrons can get closer to the nucleus

26. More electrons, so more repulsion, so electrons are pushed further away

A = 21; B = 18; C = 15; D = 13; E = 10