**Reg. NO:**

**TIME: 45 MIN**

**DATE: 19.4.20**

**CLASSIFICATION OF ELEMENTS AND PERIODICITY IN PROPERTIES-KEY- AND SOLUTIONS**

**SUBJECT: CHEMISTRY**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | :CLASSIFICATION OF ELEMENTS AND PERIODICITY IN PROPERTIES ANSWER KEY | | | | | | | | | 1) | **d** | **2)** | **c** | **3)** | **b** | **4)** | **b** | | 5) | **b** | **6)** | **b** | **7)** | **d** | **8)** | **a** | | 9) | **c** | **10)** | **b** | **11)** | **c** | **12)** | **d** | | 13) | **d** | **14)** | **c** | **15)** | **b** | **16)** | **b** | | 17) | **d** | **18)** | **d** | **19)** | **d** | **20)** | **a** | | 21) | **c** | **22)** | **b** | **23)** | **b** | **24)** | **c** | | 25) | **b** | **26)** | **c** | **27)** | **a** | **28)** | **c** | | 29) | **c** | **30)** | **c** |  |  |  |  | | | |
| **: HINTS AND SOLUTIONS :** | |
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| **1** | **(d)**  Born-Haber cycle inter-relates the various energy terms involved in ionic bonding. |
| **2** | **(c)**  Follow bonding rules. |
| **3** | **(b)**  metals are most electropositive elements. |
| **4** | **(b)**  In -atom contains only two electrons. |
| **5** | **(b)**  Fluorine is more reactive than chlorine, bromine and iodine |
| **6** | **(b)**  Due to H-bonding in . |
| **7** | **(d)**  The order of screening effect for a given shell electrons is . |
| **8** | **(a)**  The ionisation energy of elements decreases down the group. |
| **9** | **(c)**  in has -hybridization    and possesses two axial bonds and one equatorial bond Two lone pairs are at equatorial position give rise to bent ‘T’ shape to . |
| **10** | **(b)**  In like atoms, electronegativity difference is zero. |
| **11** | **(c)**  molecule is paramagnetic like having 2 unpaired electrons. |
| **13** | **(d)**  Along the period acidic strength of oxide increases |
| **14** | **(c)**  In order to belong with the same family, the outer configuration must be the same |
| **15** | **(b)**  is most stable as it has half filled -orbitals. |
| **16** | **(b)**  The atomic radius decreases along the period. Also cations are always smaller than their parent atom and anions are always larger than their parent atom . |
| **17** | **(d)**  . |
| **18** | **(d)**  Cation radius increases down the group. |
| **19** | **(d)**  Cyanide ion is,  . |
| **20** | **(a)**  All are isoelectronic species; more is nuclear charge smaller is ionic size. |
| **21** | **(c)**  Electron affinity order for halogens is . |
| **22** | **(b)**  N atom has smallest radius. |
| **23** | **(b)**  Halogens () after getting one electron occupy configuration, thus have zero |
| **24** | **(c)**  In general, density increases on moving downward in a group but density of potassium (K) is lesser than that of the sodium (Na). This is because of the abnormal increase in atomic size on moving from Na (86 pm) to K (227 pm).  Thus, the correct order of density is |
| **25** | **(b)**  The oxide having maximum heat of formation per oxygen atom (thus energy needed to break one bond will be highest) will be most stable.  MgO is most stable oxide among and MgO. |
| **26** | **(c)**  If Aufbau rule is not followed then 19th electron in K enters in sub-shell, not in |
| **27** | **(a)**  The most electronegative element is and next to is . |
| **28** | **(c)**  Larger is the size of atom, lesser is the tendency for overlapping, lesser is bond energy. |
| **29** | **(c)**  Bond angles in and are and respectively. Also has -hybridization and bond angles of hydrides decreases down the group. |
| **30** | **(c)**  The correct increasing basic strength:  is the most basic because of its small size, the electron density of electron pair is concentrated over small region. As the size increases, the electron density gets diffused over a large surface area and hence the ability to donate the electron pair (basicity) decreases. |