**Reg. NO:**

**TIME: 45 MIN**

**DATE: 24.4.20**

**CHEMICAL BONDING-ANSWER KEY-HINTS AND SOLUTIONS**

**SUBJECT: CHEMISTRY**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | : CHEMICAL BONDING - ANSWER KEY | | | | | | | | | 1) | **b** | **2)** | **b** | **3)** | **b** | **4)** | **d** | | 5) | **b** | **6)** | **b** | **7)** | **b** | **8)** | **a** | | 9) | **b** | **10)** | **b** | **11)** | **c** | **12)** | **b** | | 13) | **c** | **14)** | **a** | **15)** | **a** | **16)** | **d** | | 17) | **b** | **18)** | **c** | **19)** | **a** | **20)** | **c** | | 21) | **b** | **22)** | **a** | **23)** | **c** | **24)** | **d** | | 25) | **c** | **26)** | **d** | **27)** | **b** | **28)** | **a** | | 29) | **c** | **30)** | **a** |  |  |  |  | |

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| **-: CHEMICAL BONDING-HINTS AND SOLUTIONS :-** | | |
| 1 | **(b)**   |  |  | | --- | --- | | **Molecule** | **Hybridization** | |  |  | |
| 2 | **(b)**  is smaller than and thus, smaller is cation more is hydration energy. |
| 3 | **(b)**  Number of lone pair in is one (1). The structure of is given as follows :    One -bond so remaining six electron pairs form an  octahedron with one position occupied by a lone pair. |
| 4 | **(d)**  These are the factors on which van der Waals’ forces depend. |
| 5 | **(b)**  It has -hybridization with one lone pair on . |
| 6 | **(b)**  Bond order  BO of NO<BO of  Bond length of NO is greater than the bond length of . |
| 7 | **(b)**  Element with atomic number 20 is metal (Ca); it will combine with non-metal. |
| 8 | **(a)**  A decrease in -character increases bond length. |
| 10 | **(b)**  Calculated dipole moment,  Percentage of ionic character = |
| 11 | **(c)**  involves-hybridization on carbon atoms. |
| 12 | **(b)**  According to molecular orbital theory.  Bond order in = |
| 15 | **(a)**  Bond formation is always exothermic. Compounds of sodium are ionic. |
| 16 | **(d)**  In case of water, five water molecules are attached together through four hydrogen bonding |
| 17 | **(b)**  Removal of electron is easier in the order of shell |
| 18 | **(c)**  Bond order of , and are 3, 2.5 and 2 respectively.  Bond energy bond order. |
| 19 | **(a)**  F*X*F angles of two types are present in hybrid orbitals. Since, shows hybridisation as follows, therefore, it exhibits two different F*X*F angles. |
| 20 | **(c)**  -characterbond angle  For 25% character (as in hybrid orbital), bond angle is 109., for 33.3% character (as in hybrid orbital),bond angle is and for 50% character (as in hybrid orbital ), bond angle is .  Similarly, when the bond angle decreases below thecharacter will decrease accordingly  Decreasing in angle °  Decrease in -character  Actual decrease in bond angle  Expected decrease in -character  Thus, the -character should decrease by about 3.56%, -character |
| 21 | **(b)**  B has only six electron in . |
| 22 | **(a)**  Like gets dissolved in like. It is theory. |
| 23 | **(c)**  Ionic compounds are good conductor of electricity in molten or in solution state. However, they are bad-conductor in solid state. |
| 24 | **(d)**  In benzene bonds are present. The structure of benzene is |
| 25 | **(c)**  In ion the C-atom undergoes-hybridisation. It has triangular planar structure. While andhave tetrahedral structure. |
| 26 | **(d)**  has trigonal bipyramid geometry. |
| 27 | **(b)**  has octahedral geometry, hybridisation and bond angle is    of *d*-character  So, are bond angle =  and*d*-character = 33%. |
| 28 | **(a)**  Head on overlapping give rise to -bond formation. |
| 29 | **(c)**  Alleneis . |
| 30 | **(a)**  Silicate ion is the basic structural unit of silicates. Silicates are metal derivatives of silicic acid. |