Chemical Bonding

Sr	Questions	Answers Choice
1	The electronegativeities of F,Cl,Br and I are 4.0,3.0,2.8,2.5 respectively.Hydrogen halide with a high percentage of ionic character is	A. HF B. HCL C. HBr D. HI
2	Ionic radius, in a period from left to right	A. Increases B. Decreases C. Decreases then increases D. Increases and decreases
3	Covalent compounds are soluble in	A. Polar solvents B. Non-polar solvents C. Concentrated acids D. All solvents
4	During the formation of a chemical bond the potential energy of the system	A. Decreases B. Increases C. Does not change D. None of these
5	Among the alkaline earth metals the element forming predominantly covalent compounds is	A. Be B. Mg C. Sr D. calcium
6	Planar geometry of molecules is due to	A. sp³hybridization B. sp²hybridization C. sp hybridization D. P - p overlap
7	The shape of methanol, ammonia and water molecule can be explained by assuming	A. Sp³hybridization B. Sp²hybridization C. Sp hybridization D. All of these
8	Which of the following statements is not correct regarding bonding molecular orbitals?	A. Bonding molecular orbitals possess less energy than atomic orbitals from which they are formed B. Bonding molecular orbitals have low electron density between the two nuclei C. Every electron in the bonding molecular orbitals contributes to the attraction between atoms D. Bonding molecular orbitals are formed when the electron waves undergo constructive interference
9	The most suitable method of the separation of a mixture of ortho and para-nitrophenol mixed in the ratio of 1: 1 is	A. Distrillation B. Crystallization C. Vapourisation D. Colour spectrum
10	The force which holds the atoms together to form a compound is called	A. A chemical bond B. Van der waal's force C. Dispersion force D. London force
11	The electronegativity of elements in a period from left to right	A. Decreases B. Increases C. First decreases then increases D. First increases then decreases
12	The equation for the first ionization energy of hydrogen is	
13	In OF_2, number of bond pairs and lone paris of electrons are respectively	A. 2,6 B. 2,8 C. 2,10 D. 2,9
14	Noble gases have the electronic configuration with their valance shell ns^2np^6except one	A. He B. Ne C. Kr D. Xe

15	Question Image	A. 154 pm B. 133 pm C. 120 pm D. 150 pm
16	$SnCl_2$have _____ shape	A. Planner B. Tetrahedral C. Angular D. None
17	On the basis of VSEPR theory $SO_2$is a	A. Liner molecule B. A bent molecule C. A strong molecule D. A gaseous molecule
18	Which of the following molecules has unpaired electrons in anti-bonding molecular orbitals?	A. O₂ B. N₂ C. Br₂ D. F₂
19	Which of the following geometry is associated with the compound in which the central atom assumes sp^3d hybridization?	A. Planar B. Pyramidal C. Angular D. Trigonal bipyramidal
20	According to VSEPR theory, the shape of the water molecule is	A. Octahedral B. Distorted tetrahedral C. Planar triangle D. Linear
21	XeF_4has shape of	A. Sphere B. Trigonal bipyramidal C. Tetrahedral D. Square planar
22	The degree of polarity of molecule is known as its	A. Dipole moment B. Moment arm C. Bond energy D. Ionic character
23	Which of the following hydrides has the lowest boiling point?	A. H₂O B. H₂S C. H₂S3 D. H₂Te
24	Tripple bond is present in	A. O₂ B. H₂ C. N₂ D. Cl₂
25	The overlapping of two partially filled atomic orbital is in such a way that the probability of finding the electron pair is maximum along the axis joining the two nuclei, the bond is	A. Sigma bond B. Pi bond C. Ionic bond D. Non-polar bond
26	When an electron is absorbed in an empty or partially filled orbital of an atom, the energy released is called	A. Ionization energy B. Potential energy C. Electron affinity D. Bond energy
27	When of the following is isolelectronic with krypton	A. Ca⁺⁺ B. Al⁺⁺⁺ C. Br⁻¹ D. I⁻¹
28	Which for the following has no dipole moment	A. HCl B. H₂S C. H₂O D. CO₂
29	Which of the following has highest bond order	
30	Question Image	A. Excitantion of an electron from 2s to 2p-orbital B. Transfer of three electrons from B to the other atoms C. Excitation of two electrons form 2s orbital to 2p orbital D. Formation of molecular ion
31	N-atom forms three covalent bonds, its electronic configuration is	
32	Water H_2O is liquid while hydrogen sulphide H_2S is a gas beause	A. Water has higher molecular weight B. Hydrogen sulphide is a weak acid C. Sulphure has high electronegativity than oxyhe D. Water molecules associate through hydrogen bonding

		hydrogen bonding
33	All covalent bonds formed between the two atoms are non-polar when	A. Covalent bond between two non-metal atoms B. Covalent bond between metal and non-metal C. Covalent bond between two atoms of same element D. Covalent bond between metal atoms
34	Which of the following molecules have sp^3hybridized carbon	A. CH₄ B. C₂H₄ C. C₂H₂ D. CO₂
35	Nitrogen in $NH_3$is sp^3hybridized but the bond angle in $NH_3$is 107° and not 109.5° due to	A. sp³orbital planar B. sp³orbital trigonal C. Repulsion between lone pair and bonded pairs D. None of them
36	Shape of $ClO_3$is	A. Triangular pyramidal B. Tetrahedral C. Triangular planar D. Triangular bipyramidal
37	The three N - Hσ-bonds are made by	A. sp³- s overlap B. sp²- s overlap C. P - p overlap D. sp - overlap
38	Which of the following species has unpaired electrons in antibonding molecular orbitals	
39	The covalent bonds are	A. Unidirectional B. Bi-directional C. Non-directional D. Multi-directional
40	Electronegativity values of the elements F, Cl and Br vary	A. F > Cl > Br B. Br > Cl > F C. Cl > Br > F D. Cl > F > Br
41	The bond angles in methane $CH_4$are equal to	A. 109.5° B. 107.5° C. 104.5° D. 120°
42	Which of the hydrogen halides has the highest percentage of ionic character	A. HCl B. HBr C. HF D. HI
43	Which of the following has unchanged valency?	A. H B. Na C. Fe D. Oxygen
44	Size of an anion is increased as compared to its atom because of the	A. Addition of new shell B. Repulsion of electrons in the valence shell C. Decrease in nuclear charge D. Increase in the unclear charge
45	Three sp^2hybrid are co-planar at an angle of	A. 104.5° B. 109.5° C. 107° D. 120°
46	Which of the following molecules have its central atom sp^2hybridized	A. CH₄ B. C₂H₂ C. C₂H₄ D. CCl₄
47	Which carbon is more electronegative?	A. sp³- hybridized carbon B. sp-hybridized carbon C. sp²-hybridized carbon D. always same irrespective of its hybrid state
48	The shape of the molecule $SF_2Cl_2$is	A. Trigonal bipyradmidal B. Cubic C. Octahedral D. Tetrahedral
49	In a group the atomic size increase downward due to	A. Addition of electronic shells B. Increase in the proton number C. Repulsion of electrons

		C. Repulsion of electrons D. All of the above
50	Molecular orbital picture of N_2 indicates	A. One unpaired electron B. Two unpaired electron C. No unpaired electron D. None of these
51	Atomic number of Al is 13. When it forms ionic bond with oxygen the number of electrons lost by 1 Al atom is	A. 1 B. 2 C. 3 D. 4
52	Maximum hydrogen bonds in water are	A. 4 B. 3 C. 2 D. 8
53	The nature of interparticle forces in benzene is	A. Dipole-dipole interaction B. Dispersion force C. Ion-dipole interaction D. H-bonding
54	The bond order in No is 2.5 while that in $NO^+$is 3.Which of the following statements is true for these two species?	A. Bond length in NO⁺is greater than in NO B. Bond length in unpredictable C. Bond length in NO⁺is equal to that in NO D. Bond length in NO is greater than in NO⁺
55	The shape of gaseous $SnCl_2$is	A. Tetrahedral B. Linear C. Angular D. T-shaped
56	Coordinate covalent bond is present in the molecules	A. H₂O B. BF₃ C. SiO₂ D. SO₂
57	The geometry of 4 sp^3hybrid orbitals on an atom is	A. Square planar B. Tetrahedral C. Trigonal planar D. Linear
58	Generally electron affinities for elements in a period from left to right	A. Decreases B. Increases C. Remain same D. Increases alternatively
59	Question Image	A. The ionization energy of A is high and electron affinity of B is low B. The ionization energy of A is low and electron affinity of B is high C. Both the ionization energy of A and electron off affinity of B are high D. Both the ionization energy of A and electron affinity of B are low
60	In sp^2hybridization bond angle is _____	A. 120° B. 180° C. 109.5° D. None
61	One of the following bonds is polar but compound is non-polar	A. H₂O B. NH₃ C. HCl D. CO₂
62	The driving force for making a bond is	A. To attain noble gas electronic configuration B. To make soled compounds C. To make different compounds D. To make gaseous substances
63	A bond between two atoms may be obtained by sharing of electrons such a bond is called	A. An ionic bond B. A coordinate bond C. A dative bond D. A covalent bond
64	The tendency of an atom to attract shared electron pair towards itself is called	A. Covelent bond B. Electronegativity C. Ionization potential D. Electronic affinity
		A. 108°C B. 101.4<span style="color: rgb(84

65	The boiling point of heavy water is	B. 101.4°C C. 99°C D. 110°C
66	When two hydrogen atoms approach to form a chemical bond	A. The repulsive forces dominate the attractive forces B. The attractive forces, dominate the repulsive forces C. The energy of atoms increases D. The two atoms start ionization
67	Which of the following is a polar molecules	A. Carbon dioxide B. Carbon tetrachloride C. Methanol D. Ethane
68	The Electro-negatively difference for ionic bond must be greater than	A. 1.6 B. 1.7 C. 1.8 D. 1.0
69	Inter molecular forces in solid hydrogen are	A. Covalent forces B. Van der Waal forces or London dispersion forces C. Hydrogen bonds D. All of these
70	Which of the following species is paramagnetic?	A. CO₂ B. NO C. O²⁻ D. CN
71	The bond order of individual C - C bond is benzene is	A. One B. Two C. Between one and two D. One and two alternately
72	Elements have the tendency to attain 8 electrons in their valence shell. This is known as	A. Octer rule B. Hunds rule C. Pauli exclusion principle D. Auf ban principle
73	The bond angle depends upon the	A. Types of bonds B. Number of bonds C. Non-bonding electron pairs D. All of the above
74	Antibonding MO is formed by	A. Addition of atomic orbitals B. Substraction of atomic orbitals C. Multiplication of atomic orbitals D. None of these
75	Which of the following phenomena will occur when two atoms of the elements having same spin of electron approach for bonding?	A. Orbital overlap will not occur B. Bonding will not occur C. Both (A) and (B) are correct D. None of the above are correct
76	The ionic bonds are	A. Unidirectional B. Bi-directional C. Non-directional D. Multi-directional
77	Outer shells of two elements X and Y have two and six electrons respectively. If they combine, the expected formula of compound will be	A. XY B. X₂Y C. X₂Y₃ D. XY₂
78	Fluorine molecule is formed by	A. The axial p-p overlap B. The sidewise p-p overlap C. The axial s-p overlap D. The overlap of two sp²hybrid orbitals
79	Number of sigma bonds in $P_4O_{10}$is	A. 6 B. 7 C. 17 D. 16
80	Atoms obey octet rule by sharing-electrons making covalent bonds according to	A. Lewis and Kossal theory B. Valance bond theory C. VSEPR theory D. Molecular orbital theory

81	The bond order for He_2molecule is	A. zero B. 1/2 C. 1 D. 2
82	Which of the following molecules have multiple bonds	A. CH₄ B. C₂H₄ C. C₂H₆ D. CCl₄
83	Which of the following has zero depole-moment?	A. ClF B. PCl₃ C. SiF₄ D. CFCl₄
84	The number of antibonding electron pairs in O^{2-}molecular ion on the basis of MOT is	A. 4 B. 3 C. 2 D. 5
85	The structure of $ICl_2$is	A. Trigonal B. Trigonal bipyramidal C. Octahedral D. Square planar
86	According to MO Theory, the species O_2+ possesses	A. bond order of 2.5 B. three unpaired C. diamagnetic character D. stability lower then O₂
87	The bond order O_2molecule is	A. 1 B. 2 C. 3 D. Zero
88	If two lone pairs are present then bond angle of tetrahedral compound reduces to _____ degrees	A. 109.5° B. 107.5° C. 104.5° D. None
89	Hydrogen chloride molecule contains	A. Covalent bond B. Double bond C. Co-ordinate bond D. Electrovalent bond
90	Which one of these is weakest?	A. Ionest bond B. Covalent bond C. Metallic bond D. Van der Waal's forces
91	Shielding effect intervening electrons causes	A. Decreases in atomic radii in a period from right to left B. Increase in atomic radii in a period from left to righ t C. Decrease in atomic radii down the group D. Increase in atomic radii down the group
92	Generally ionization energy of atoms decreases by	A. Decreases in atomic size B. Increase in atomic size C. Increase in nuclear charge D. None of these
93	The atomic radius of hydrogen is 37	A. Pecometer B. Manometer C. Angstrom D. Micrometer
94	Mg becomes isoelectronic with neon when it	A. Loses two electrons B. Gains two electrons C. Loses 1 electron D. Gains 1 electron
95	The number of electron pairs shared in carbon tetrachloride molecule is	A. 2 B. 3 C. 4 D. 1
96	Which is made by coordinate covalent bond	A. H₃O⁺ B. H₂O C. CH₄ D. HCl
97	B-atom in BF_3has	A. sp³hybridization B. sp²hybridization C. sp hybridization D. no hybridization

98	H-bonding is not present in	A. Glycerine B. Water C. Hydrogen sulphide D. Hydrogen fluride
99	An ionic compound $M_2S_3$is formed by the metal M,, the metal is	A. Ca B. Ba C. K D. Al
100	A molecule in which sp^2hybrid orbitals are used by the central atom in forming covalent bonds in	A. He₂ B. SO₂ C. PCl₅ D. N₂
101	Ionization energies increase from left to right along the period due to	A. Increase in nuclear charge B. Repulsion of electron increases C. Repulsion of protons increase D. Atomic size increase along the period
102	Generally the bond formed by metals with non-metals is	A. Ionic B. Covalent C. Polar D. Non- polar
103	Which of the following charge	A. Li B. Be C. H D. He
104	The shape of ClO^-_3according to valence shell electron pair repulsion theory will be	A. Planar triangle B. Pyramidal C. Tetrahedral D. Square planar
105	The number of bonds in nitrogen molecule is	
106	When elements of group I react with the elements of group VIA theory form	A. Ionic bond B. Covalent bond C. Polar bond D. None
107	In which of the following theories the hybridizationis considered	A. Vsepr B. Lewis C. Molecule orbital D. Valence bond
108	The formation of compounds like PF_5, BCl_3, SF_6indicates that	A. These halides are ionic B. These halides are covalent C. They are Lewis acids D. Octet rule not obeyed so the rule is not universal
109	The electron affinity of chlorine may be represented by the equation	
110	The bond angle H - O - H in ice ins closest to	A. 120° , 28['] B. 60° C. 90° D. 109°
111	From the difference between expected bond energies for the normal covalent bond and experimentally determined values Pauling calculated the values of	A. Ionization potential of elements B. Electron affinity of elements C. Electronegativity of elements D. Bond length
112	Ca, Mg, Be, Ba, belong to the same group, the order of their ionization energy values is	A. Be > Mg> Ca > Ba B. Ba > Ca > Mg > Be C. Ca > Mg > Be > Ba D. Ba > Mg > Ca > Be
113	In H_2O molecule the bond angle is	A. 90° B. 109.5° C. 107° D. 104.5°
114	Which of the following molecules has a net dipole moments	A. CO₂ B. CS₂ C. SO₂

		C. CC₂4</sub> D. CCl₄
115	Which of the following has polar bond	A. O₂ B. N₂ C. HCl D. Cl₂
116	Two H-atom combine to form a strong H_2molecule due to	A. Increase in potential energy B. Decrease in potential energy C. Energy remains unchanged D. Distance is increased