"Dissemination of Education for Knowledge, Science and Culture" - Shikshanmaharshi Dr. Bapuji Salunkhe



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NAAC Reaccrediated : "B" (Third Cycle)

Department of Chemistry B. Sc. I Sem. - I Paper No. I (Inorganic Chemistry) Question bank



Q1. MCQ questions

1. Atomic Size depends on				
A) Number of shell	B) Screening effect			
C) Effective nuclear charge s	D) All of these			
2. Principle quantum number represents				
A) Energy of electron	B) Spin of electron			
C) Orientation of orbital's	D) Shape of Orbital			
3. Degenerate atomic orbital's have	energy.			
A) Same	B) Different			
C) Very High	D) Very low			
4. Energy required to detach an electron from isolated gaseous atom is called enthalpy.				
A) Electron	B) Ionisation			
C) Electron gain	D) Electronegativity			
5. If Azimuthal quantum number = 2, shell will be				
A) K	B) L			
C) M	D) N			
6. Which of the following is not a periodic properties?				
A) Atomic radius	B) Ionization enthalpy			
C) Electron affinity	D) All of these			
7. Heisenberg uncertainly principle could be applied to particles.				
A) Macro	B) Fundamental			
C) Microscopic	D) Both A & B			
8. Wave nature of an electron was first given by				

A) d Broglie	B) Heisenberg			
C) Bhor	D) Heisenberg			
9. As atomic size increases, ionisatio	n potential			
A) Increases	B) Decreases			
C) First increases and decreases	D) Remains constant			
10. Born – Haber cycle is used to cal	culate			
A) Lattice Energy	B) Electron affinity			
C) Heat of Formation	D) All of the above			
11. Non-directional bond is				
A) Covalent	B) Polar			
C) Non polar	D) Ionic			
12. Which of the following molecule	has a zero dipole moment?			
A) HF	B) CHCl ₃			
C) H ₂ O	D) CO ₂			
13. The number of units of charge or	an ion is its Valency.			
A) co	B) electro			
C) co-ordinate	D) combination			
14. Which of the following compound	nd is soluble in polar solvent ?			
A) HF	B) NaCl			
C) CO ₂	D) KI			
15. The bond moment of a bond is the	e dipole moment of a Molecule.			
A) Triatomic	B) Homonuclear diatomic			
C) Heteronuclear diatomic	D) Polynuclear			
16. Which of the following has large	st dipole moment ?			
A) CO ₂	B) CCl ₄			
C) CHCl ₃	D) CH ₄			
17. sp hybrid orbitals are disposed.				
A) Trigonally	B) Diagonally			
C) Irregularly	D) Periodically			
18. In BeCl ₂ beryllium is vale	nt			
A) Mono	B) Tri			
C) Di	D) Zero			
19. The structure of SF_6 is				
A) Octahedral	B) Tetrahedral			
C) Pentagonal Bipyramidal	D) Trigonal bipyramidal			

20. Geometry of IF_7 is	valen	•			
A) Octahedral]	3) Tetrahedral			
C) Pentagonal Bipyram	nidal I	D) Trigonal bipyramid.			
21. Bond angle in SiCl	4 is				
A) 109.28 ⁰]	3) 90 ⁰			
C) 107 ⁰]	D) 104.5			
22. In PCl ₅ type of hybr	ridisation is				
A) Sp ³ d]	$3) \operatorname{Sp}^2$			
C) Sp ³]	$D) Sp^2 d^2$			
23. Which of the follow	ving shows iso	norphism?			
A) NaF]	B) NaF & MgCl ₂			
C) NaF & CaCl ₂]	D) MgCl ₂			
24. Greater the dipole r	noment of a bo	nd, greater will be its C	haracter.		
A) Ionic]	B) Covalent			
C) Non-polar]	D) None of these.			
25. Which of the follow	ving is not a pe	riodic properties?			
A) Atomic radius]	3) Ionization enthalpy			
C) Spectroscopic]	D) Electronegative			
26. General electronic	configuration o	f chromium (Cr) is			
A) (Ar) $3d^{5}4s^{2}$	B) (Ar) $3d^44s^3$				
C) (Ar) 3d ³ 4s ³	D) (Ar) $3d^{6}4s^{2}$				
27 principle gives	s an idea about	the sequence in which various orbit	al's can be filled by electrons.		
A) Aufbau		B) Hunds rule of Maximum	multiplicity		
C) Pauli's Exclusion		D) All of these			
28. The algebraic son compound.	ne of the electr	opositive and electronegative vale	nces must always in an ionic		
A) Zero	b. One	c. Two d. Three			
29. The ionic solids are	e usually in	nature.			
A) Amorphous	B) Crystallin	e C) Polar	D) Non – polar		
30. Ionic compounds an	re				
A) Super conductor	B) Insulator	C) Good conductor	D) None of these		

31is the polar	solvent.					
A) KBr	B) NaCl	C) KCl	D) All of these			
32. Ionic compound	s have					
A) High melting pot	ints B) Low boiling	points C) High l	poiling points D)	Both a & c.		
33. The amount of	energy required to rem	ove an electron compl	etely from an isolated gase	eous atom is		
known as						
A) Ionisation energ	B) Ionisation po	tential C) Ionisat	tion enthalpy D) All of	the above.		
34. Born haber cycl	e is used for to calculate	the				
A) Lattice energy	B) Electron affinity	C) Ionisation ene	ergy D) Both a & b			
35. Which of the fol	llowing molecule has a z	ero dipole moment?				
A) HF	B) CHCl ₃	C) H ₂ O	D) CCl ₄			
36. The dipole mom	nent of symmetrical mole	ecule will be				
A) less than zero	B) greater than zero	C) equal to zero	D) equal to one			
37. Fajans' rules are applicable to account covalent character of						
A) covalent compo	ounds B) ionic of	compounds C) n	netallic compounds	D) Network		
solids						
38. Geometry of molecule depends upon type of						
A) Hybridisation	B) Ionisation energy	C) Electron affinity	D) Both b & c			
39. Increase in percent 's' character in hybrid orbitalthe stability of the system.						
A) Decrease	B) Increase	C) Constant	D) none of these			
40. As in beryllium number of unpaired electrons in its valence shell is						
A) 0	B) 1	C) 2	D) 3			
41. In PCl ₅ , P isvalent.						
A) Tri	B) Tetra	C) Penta	D) Hexa			
42. According to Le	ewis, a covalent bond is f	formed by				
A) Pairing of electro	ons B) overlapping	of atomic orbital's	C) sharing of proton pair	D) sharing		
of an electron pair.						
43. Which of the following has sp3 hybridisation?						

44. Which of the following property is not of ionic compound?

A) Solubility in water B) High melting and boiling points C) Electrical conductivity in solid state D) Electrical conductivity in molten state

45. Carbon monoxide is iso-electronic to

A) O₂ **B**) N₂ C) NO D) C₂ 46. The structure of SF_6 is A) Octahedral B) tetrahedral C) pentagonal bipyramidal D) trigonal bipyramidal. 47. The stability of molecule with increase in bond order. A) decrease B) remains same C) increases D) First increases then decrease 48. when l = 0, the orbital will be A) p B) s C) d D) f 49. In BMOs electron density between two bonded atoms is A) minimum B) maximum C) equal D) nil 50. atomic radiusalong the group in the P. T. B) remains same A) decrease C) increases D) First increases then decrease

Q. 2 Long Answer type questions

- 1. Explain the all quantum numbers.
- 2. Explain the factors affecting stability of half filled and completely filled orbitals.
- 3. Explain chemical properties s block elements.
- 4. Explain brief Born-Haber cycle.
- 5. Explain the fajans' rule to the polarising power of cation & anion.
- 6. Name the energy terms involved in ionic bond formation and explain them.
- 7. What is hybridization? Explain need of hybridisation with suitable example.
- 8. Explain linear, trigonal planer, tetrahedral, pentagonal bipyramidal, octahedral hybridisation with suitable example.

9. What is an energy level sequence ? explain the energy level sequence when n=1 & n=2.

10. Draw & explain the MOT of N_2 & O_2 molecule

Q. 3. Short Answer type questions

- 1. Who has extended Einstein concept of light ?
- 2. What is the general electronic configuration of s, p, d, f block elements?
- 3. According to bhor's theory of hydrogen atom which state does not aborb or emit energy?
- 4. What will be the spin of electrons to pair in an orbital?
- 5. Formation of ionic bond.
- 6. Energies of in ionic bond formation.
- 7. Application of fajans rules.
- 8. Percent ionic character of a covalent bond.
- 9. Explain the types of molecular orbitals.
- 10. Give the characteristics of ABMOs/ BMOs.
- 11. Explain the conditions for successful overlap.
- 12. Write a short note on VBT
- 13. All the P-Cl bonds in PCl₅ are not equivalent. Explain it.
- 14. Define explain terms. A) chemical bond B) covalent bnd C) hybridisation D) ionic bond
- 15. Draw & explain the MOT of CO molecule.
- 16. Explain Dipole moment
- 17. Explain polarizing power and polarisability.
- 18. Born Haber cycle for NaCl.
- 19. When l=2, which orbital will form?
- 20. What will be the spin of electrons to pair in an orbital?