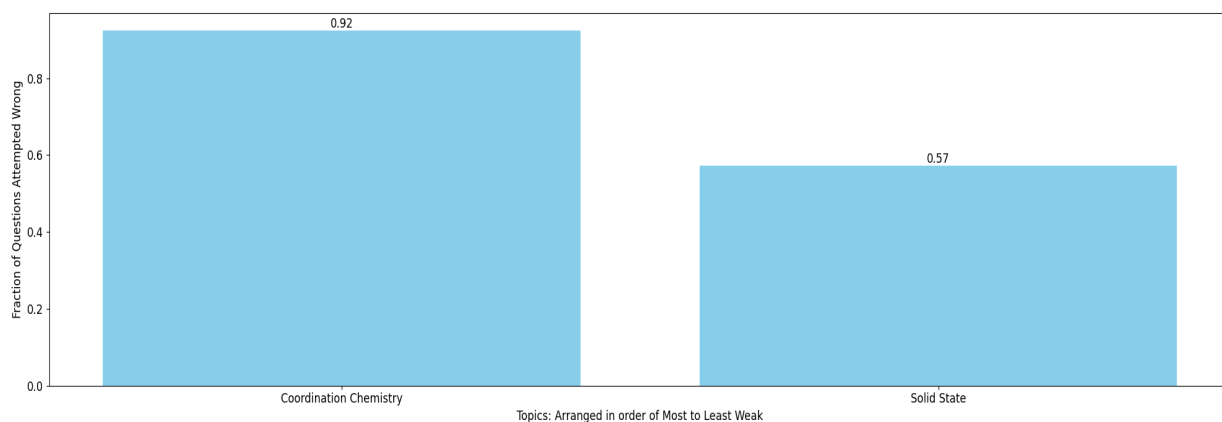


# Drishti Garg Total MLAssist - Personalised DPP

## Question Paper Analysis:



## Weak Topic Analysis:



### Practice Questions:

#### Coordination Chemistry:

83. Other than the X-ray diffractions, how could be the following pairs of isomers be distinguished from one another by  
[Cr(NH<sub>3</sub>)<sub>6</sub>] [Cr(NO<sub>2</sub>)<sub>6</sub>] and [Cr(NO<sub>2</sub>)<sub>2</sub>(NH<sub>3</sub>)<sub>4</sub>] [Cr(NO<sub>2</sub>)<sub>4</sub>(NH<sub>3</sub>)<sub>2</sub>]  
(A) measuring osmotic pressure of solution at same concentration  
(B) measurement of molar conductance  
(C) measuring magnetic moments  
(D) None of these
4. Choose incorrect statement(s) regarding following complex ion.  
[Fe(ox)<sub>3</sub>]<sup>3-</sup> and [Fe(NO<sub>2</sub>)<sub>6</sub>]<sup>3-</sup>  
(A) [Fe(ox)<sub>3</sub>]<sup>3-</sup> complex ion is more stable than [Fe(NO<sub>2</sub>)<sub>6</sub>]<sup>3-</sup>.  
(B) Both complex ions are optically inactive.  
(C) Both follow Sidgwick's rule of E.A.N.  
(D) Both are paramagnetic.
17. The "spin-only" magnetic moment [in units of Bohr magneton, ( $\mu_B$ )] of Ni<sup>2+</sup> in aqueous solution would be (At. No. Ni= 28)- [AIEEE-2006]  
(1) 0 (2) 1.73 (3) 2.84 (4) 4.90
88. The formula of the purple colour formed in Lassaigne's test for sulphur using sodium nitroprusside is [JEE MAIN 2022]  
(1) NaFe [Fe(CN)<sub>6</sub>] (2) Na[Cr(NH<sub>3</sub>)<sub>2</sub>(NCS)<sub>4</sub>]  
(3) Na<sub>2</sub>[Fe(CN)<sub>5</sub>(NO)] (4) Na<sub>4</sub>[Fe(CN)<sub>5</sub>(NOS)]

Ans. (4)

92. For which of the following types of  $dn$  configuration, the number of unpaired electrons in octahedral complexes remains same irrespective of the ligand field strength.
- (A)  $d^3$  (B)  $d^4$  (C)  $d^5$  (D)  $d^6$

### Solid State:

30. If NaCl is doped with  $10^{-3}$  mol %  $\text{SrCl}_2$ , what is the numbers of cation vacancies per mole of NaCl?

1.81 Å respectively. Calculate the co-ordination numbers of the cations in the crystals of MgS, MgO and CsCl.

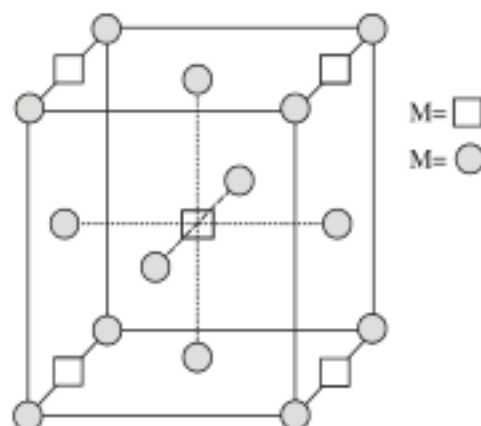
### PROBLEMS BASED ON TV AND OV

21. Spinel is a important class of oxides consisting of two types of metal ions with the oxide ions arranged in CCP pattern. The normal spinel has one-eight of the tetrahedral holes occupied by one type of metal ion and one half of the octahedral hole occupied by another type of metal ion. Such a spinel is formed by  $\text{Zn}^{2+}$ ,  $\text{Al}^{3+}$  and  $\text{O}^{2-}$ , with  $\text{Zn}^{2+}$  in the tetrahedral holes. Give the formulae of spinel.

### PROBLEMS BASED ON NaCl STRUCTURE

10. A compound  $\text{M}_p\text{X}_q$  has cubic close packing (ccp) arrangement of X. Its unit cell structure is shown below. The empirical formula of the compound is:

[JEE-2012]



- (A)  $\text{MX}$  (B)  $\text{MX}_2$  (C)  $\text{M}_2\text{X}$  (D)  $\text{M}_5\text{X}_{14}$

11. An element crystallizes in a face-centred cubic (fcc) unit cell with cell edge  $a$ . The distance between the centres of two nearest octahedral voids in the crystal lattice is: **[Jee Main, 2020]**

(A)  $\frac{a}{\sqrt{2}}$

(B)  $\frac{a}{2}$

(C)  $a$

(D)  $\sqrt{2}a$

---