

Gurudas College
Internal Assessment, 2020
Chemistry (General)
BSc. Semester-III
Subject-CEMG
Paper- CC3/GE3

Time - 30 minutes

Full Marks - 10

Answer any **TEN** questions

Each question carries **Equal** marks

1. What will be the geometry of the ionic crystal if the value of r_+/r_- (radius ratio of the monovalent cation and anion) is in the range 0.225 - 0.414?
(a) Tetrahedral (b) Linear (c) Octahedral (d) Triangular
2. The state of hybridisation of N-atom in NH_4^+ is-
(a) sp (b) sp^3 (c) sp^2 (d) sp^3d
3. The stability of ionic crystal depends principally on-
(a) High ionisation energy of cation forming species
(b) High electron affinity of anion forming species
(c) The lattice energy of crystal
(d) Low ionisation energy of cation forming species
(e) Low heat of sublimation of cation forming solid
4. Which of the following will provide the most efficient overlap?
(a) s-s (b) s-p (c) sp^2-sp^2 (d) sp-sp
5. sp^3d^2 hybrid orbitals are-
(a) Linear (b) Pentagonal bipyramidal (c) Trigonal bipyramidal (d) Octahedral
6. O_2 molecule is
(a) paramagnetic (b) diamagnetic (c) ferromagnetic (d) none of these
7. The pH of 10^{-9} (M) HCl is
(a) 6.5 (b) 7.0 (c) 5.0 (d) 9.0
8. The correct relation between S and K_{sp} for the salt $\text{Mg}(\text{OH})_2$
(a) $K_{sp} = 4S^5$ (b) $K_{sp} = 4S^3$ (c) $K_{sp} = S^2$ (d) $K_{sp} = 4S^2$

9. The Unit of the molar conductivity is-
- (a) $\text{ohm}^{-1} \text{cm}^{-1}$ (b) $\text{ohm cm}^2 \text{mol}^{-1}$ (c) $\text{ohm cm}^{-2} \text{mol}$ (d) $\text{mho cm}^2 \text{mol}^{-1}$
10. Which one of the following is not a buffer solution?
- (a) $\text{CH}_3\text{COOH} + \text{CH}_3\text{COONa}$ (b) $\text{NH}_4\text{OH} + \text{NH}_4\text{Cl}$ (c) $\text{HCOOH} + \text{HCOONa}$ (d) $\text{HCl} + \text{NaOH}$
11. Given the following data-
- $\text{Fe}^{2+}(\text{aq.}) + 2\text{e}^- \rightleftharpoons \text{Fe}(\text{s}) \quad E^0 = -0.40 \text{ V}$
 $\text{Cu}^{2+}(\text{aq.}) + 2\text{e}^- \rightleftharpoons \text{Cu}(\text{s}) \quad E^0 = +0.34 \text{ V}$
- Which one of the following is the standard e. m. f. in volts of the cell below?
- $\text{Fe}(\text{S}) | \text{FeSO}_4(\text{aq.}) || \text{CuSO}_4(\text{aq.}) | \text{Cu}(\text{S})$
- (a) +0.74 V (b) -0.74 V (c) -0.06 V (d) +0.06 V
12. Benzene reacts with Conc. HNO_3 in the presence of Conc. H_2SO_4 to give nitrobenzene. This is an example of
- (a) Electrophilic addition (b) Nucleophilic addition (c) Electrophilic substitution (d) Nucleophilic substitution
13. Benzene reacts with acetyl chloride in presence of anhydrous AlCl_3 to form
- (a) Toluene (b) Acetophenone (c) Benzaldehyde (d) None of these
14. Which of the following reagent is most suitable for preparing chlorobenzene from benzene?
- (a) Aqueous chloride (b) chlorine in presence of ultraviolet light (c) Chlorine in acetic acid (d) chlorine in the presence of FeCl_3
15. N-propyl magnesium bromide on treatment with CO_2 and further hydrolysis gives
- (a) Acetic acid (b) Propanoic acid (c) Butanoic acid (d) Formic acid