CHEMISTRY II SEMESTER IMPORTANT QUESTIONS

1) Discuss the types of oxides.
2) Discuss the structure, reactivity & stability of oxides of Carbon, Sulphur, Phosphorous & Chlorine.
3) Explain the structure & acidic nature of oxyacids of Boron, carbon, nitrogen & phosphorous.
4) Discuss the redox properties of oxyacids of Sulphur & nitrogen.
5) Write about the types of interhalogens with suitable examples. (AB, AB_3, AB_5 & AB_7 type).
6) What are polyhalides. Write about the structure of $ICl_2^{\ominus}$ & $I_3^{\ominus}$.
7) Compare pseudohalogens with halogens.
8) Write about xenon compounds. Ex- XeO_3, XeF_6, $XeOF_2$, XeF_4, XeO_2F_2.
9) What are clatherate of compounds. And discuss anomalous behaviour of He (II).
10) Explain variable oxidation states, magnetic properties & catalytic properties of d-block elements.
11) What are triads. Discuss the following triads (i) Titanium (ii) Chromium (iii) Copper.
12) What is Huckel's rule, write its application to cyclopropenyl cation, cycloheptadienyl anion & tropylium cation.
13) Discuss the electrophilic substitution reactions with mechanism of benzene. (a) Nitration (b) Halogenation (c) Friedal Craft's alkylation (d) Friedal Craft's acylation.
14) Define ortho, para & meta directing groups & ring activating & deactivating groups.
15) Explain the orientation on benzene of electrophilic substitution reaction for the following (i) activating groups (a) $-NH_2$ (b) $-OCH_3$ (ii) deactivating groups (a) $-NO_2$ (b) $-C\equiv N$ (c) $-X$ (d) $-COOH$.
16) Prepare alkyl benzene from (i) Friedal Craft's alkylation (ii) Friedal Craft's acylation followed by reduction (iii) Wurtz-Fittig reaction.

17) Explain the side chain substitution reaction of alkyl benzene.
18) Write about the molecular orbital diagram of naphthalene & anthracene.
19) Discuss the reactivity of naphthalene & anthracene (nitration & sulphonation)
20) Explain SN^1 & SN^2 reactions with mechanism & discuss their energy profile diagram.
21) Explain the stereochemistries of SN^1 & SN^2 with suitable examples.
22) Explain Raoult's law & Henry's law.
23) What are azeotropes, write its types.
24) Explain critical solution temperature of partially miscible liquids in the following systems (i) phenol- water (ii) water- triethyl amine (iii) water- nicotine.
25) Explain Fractional distillation & Steam distillation.
27) Explain Nernst distribution law with its limitations.
28) Discuss the laws of osmotic pressure, & Explain its measurement.
29) What is elevation of boiling point & depression of freezing point.
30) Derive the relation btw molecular weight & elevation in boiling point & depression in freezing point.
31) What is Van't Haff factor.
32) Discuss the Laws of Crystallography (i) Law of constancy of interfacial angles (ii) Law of Symmetry (iii) Law of rationality of indices.
33) Define space lattice & unit cell.
34) Discuss Bravais lattices.
35) Explain Bragg's equation, determine the structure of NaCl, KCl & CsCl, & discuss Bragg's method & Powder method.
36) Define titration curve, standard solution, indicator, end point.
37) Explain the types of titrations.
38) Define nucleation, precipitation, filteration, washing, drying incineration.
39) Determine Ni^{+2}.
40) Explain Valence bond theory, Free $e^{\ominus}$ theory. & Band theory.
41) What are conductors, semiconductors, & insulators.
42) Write the classification of materials, Meisner effect, & composites.

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CHEMISTRY - GRAND TEST - 2018

Sub & Paper:- Chemistry EM-I
Group & year:- B.Sc E/M - II sem

Max. marks : 80
Time : 3 hours

Section-A (Short Answer type) (5×4=20)

I. Answer any five of the following questions.

1) Discuss about the structure of AB_3 & AB_5 type interhalogens by taking suitable examples.
2) Disuss the preparation, structure, bonding & reactivity of XeF_6 & XeO_3.
3) What is Huckel's rule? Write its application to Tropylium cation.
4) Explain side chain substitution & oxidation reaction of arenes.
5) What is Henry's law & Define Azeotropes.
6) Define space lattice & unit cell.
7) Write a note on conductors, insulators & semiconductors.
8) Explain Meissner Effect.

Section-B (Essay Answer Type) (15×4=60)

9) (a) Write the classification of oxides.
   (b) Explain Chromium triad. And compare pseudohalogens with halogs.

(or)

   (c) Discuss the redox properties of oxyacids of Sulphur.
   (d) Disuss the variable oxidation states & magnetic properties of d-block elements.

10) (a) Explain the reaction & mechanism for Nitration & Sulphonation of benzene.
   (b) Discuss the mechanism & stereochemistries of SN^1 & SN^2 reactions.

(or)

   (c) Define ring activating & deactivating groups. Disuss the orientation of $-NO_2$ group in benzene, towards electrophilic substitution reaction.
   (d) Prepare alkyl benzene by Friedal Craft's alkylation, acylation followed by reduction & Wurtz-Fittig reaction.

11) (a) Discuss Raoult's law for ideal solutions

(b) Derive Bragg's equation. Give a brief note on Bravais lattices.

(or)

(c) Define elevation in boiling point & show the relationship btw ΔT_b & molar mass of solute. And define Van't Hoff factor.

(d) Define partially miscible liquids & write critical solution temperature for phenol-water system.

12) (a) Discuss the types of titrations.

(b) Write a note on Valence Bond Theory with its limitations.

(or)

(c) Write the classification of materials.

(d) Write a note on nucleation, precipitation, incineration processes. And a brief note on the determination of Ni^{+2}.