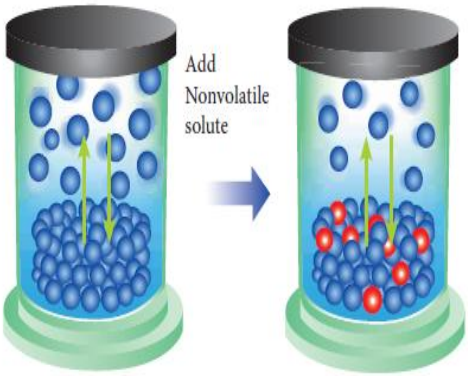
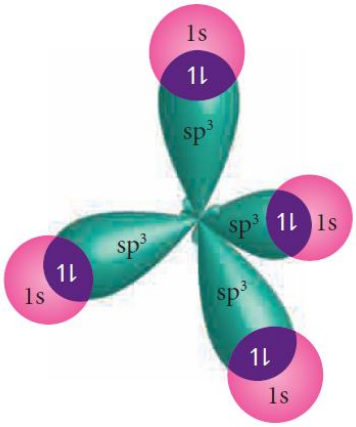
XI - Chemistry

Volume - II

UNITWISE QUESTIONS





8. Physical and Chemical Equilibrium

Answer the following questions briefly: (2 or 3 Marks)

1. What is solid-liquid equilibrium? (3)
2. What is liquid – vapour equilibrium? (3)
3. What is solid – vapour equilibrium? (3)
4. Chemical equilibrium is dynamic in nature. Why? (5)
5. What is homogeneous equilibrium? (5)
6. What is heterogeneous equilibrium? (5)
7. State law of mass action and mention its unit (5)
8. What is equilibrium constant? (6)
9. If ng = 0, +ve, -ve mention the relationship between Kp and Kc (7)
10. How equilibrium constant help to find the direction of chemical equilibrium? (10)
11. What is reaction quotient ? (11)
12. How will you predict the feasibility of a reaction using Q value? (11)
13. State Le Chatelier's principle (16)
14. How does concentration affect the chemical equilibrium? (16)
15. How does pressure affect the chemical equilibrium? (17)
16. How does temperature affect the chemical equilibrium? (18)
17. How does a catalyst and inert gas affect the chemical equilibrium? (18,19)
18. Deduce Van't Hoff equation (20)

Answer the following questions in detail : (5 Marks)

1. Derive the relationship between K_p and K_c (6)
2. Derive the K_P and K_c value for formation of HI (12)
3. Derive the K_P and K_c value for Dissociation of PCl_5 (13)
4. Derive the K_P and K_c value for Synthesis of ammonia (14)

09. Solutions

Answer the following questions briefly: (2 or 3 Marks)

1. Define Molality and Molarity (32)
2. Define Normality and Formality (32)
3. Define Mole fraction and Mass percentage (33)
4. Define volume percentage and mass by volume percentage (34)
5. Define parts per million (34)
6. What are the advantages of using standard solutions? (35)
7. What are standard and working solutions? (35)
8. Define solubility (36)
9. What are the factors influencing the solubility? (36)
10. What is the nature of solute and solvent? (36)
11. How does temperature affect the solubility? (36)
12. How does the pressure affect the solubility? (38)
13. State Henry's law (38)
14. What are the limitations of Henry's law? (40)
15. Define vapour pressure (41)
16. State Raoult's law (43)
17. How will you compare Raoult's law with Henry's law? (45)
18. What are the conditions for ideal solutions? (46)
19. What are the conditions for Non ideal solutions? (46)
20. What are colligative properties? (49)
21. What is relative lowering of vapour pressure? (49)
22. What is Ebullioscopic constant? (52)
23. What is Cryoscopic constant? (54)
24. Define osmosis (55)
25. What is osmotic pressure? (55)

26. What is isotonic solution? (56)
27. Define reverse Osmosis (57)
28. What is abnormal molar mass? (58)
29. What is Van't Hoff factor? (58)

Answer the following questions in detail: (5 Marks)

1. Explain the positive deviation of non ideal solutions (46)
2. Explain the negative deviation of non ideal solutions (47)
3. Explain the factors responsible for deviation from Raoult's law (48)
4. Determination of Molar mass weights from relative lowering of vapour pressure (50)
5. Determination of molar mass of solute from depression in freezing point (54)
6. Determination of molar mass from osmotic pressure (56)
7. Explain the application of reverse osmosis in water purification (57)

10. Chemical Bonding

Answer the following questions briefly: (2 or 3 Marks)

1. State Octet rule (69)
2. What is covalent bond? (61)
3. How will you find formal charge of an atom? (72)
4. What are the molecules not obey the octet rule ? (73)
5. What is ionic or electrovalent bond? (74)
6. What is coordinate covalent bond ? (75)
7. What is bond order ? (76)
8. Define bond enthalpy (77)
9. What is resonance? (78)
10. What is dipole moment? (79)
11. What is polar covalent bond? Give an example (79)

12. CO_2 has zero dipole moment even though two polar bonds. Why? (80)
13. How will you find ionic character? (80)
14. What is polarization? (80)
15. State Fajan's rule (81)
16. What are the important principles of VSEPR theory? (81)
17. What are sigma, Pi bond? (87)
18. What is hybridization? (89)
19. Draw the hybridization in $BeCl_2$ (90)
20. Draw the hybridization in BF_3 (91)
21. Draw the hybridization in CH_4 (92)
22. Draw the hybridization in PCl_5 (93)
23. Draw the hybridization in SF_6 (94)
24. What is metallic bonding? (102)

Answer the following questions in detail : (5 Marks)

1. Explain Lewis dot structure for CO_2 (73)
2. Explain the types of exception from octet rule (73)
3. Explain the resonance structure of CO_3^{2-} (78)
4. Explain the salient features of VB theory (82-84)
5. Explain the formation of H_2, Fe, HF, O_2 molecule by overlapping of orbitals (87-89)
6. Explain the hybridization in ethylene molecule (95)
7. Explain the hybridization in acetylene molecule (96)
8. Explain the salient features of MO Theory (99)
9. Explain the molecular formation of the following by MOT
   i) N_2 ii) O_2 (100)
10. Explain the molecular formation of the following by MOT
    i) CO ii) NO (101)
11. Explain the molecular formation of the following by MOT
    i) H_2 ii) Li_2 iii) B_2 iv) C_2 (99)

Note: * Study Lewis dot structure of SO_3, NH_3, CH_4, N_2O_5, HNO_2, H_3PO_4, SO_3, NO_3^-, SO_4^{2-}, HNO_3, O_3

* Study the shapes of various molecules by VSEPR theory (81)

11. Fundamentals of Organic Chemistry

Answer the following questions briefly: (2 or 3 Marks)

1. What are homologous series? (112)
2. What are the types of Tautomerism? (134)
3. What is optical isomerism? (137)
4. What are enantiomers? (137)
5. What are the conditions for optical isomerism? (137)
6. What are the techniques used to separate and purify organic compounds? (148)
7. Define sublimation (148)
8. What is crystallization? Mention the steps. (138)
9. What is distillation? (149)
10. How will you separate the liquid by fractional distillation? (149)
11. How will you separate the mixture of solids and liquids? (150)
12. What is Azeotropic distillation? (150)
13. What is differential extraction? (150)
14. Define chromatography (151)
15. What are the various methods of chromatography? (151)
16. Define adsorption chromatography (151)
17. What is partition chromatography? (152)

Answer the following questions in detail : (5 Marks)

1. Explain the characteristics of organic compounds (111)
2. Explain the classification of organic compounds (112)

3. Explain the types of isomerism (132)
4. How will you detect carbon and hydrogen? (137)
5. How will you test the presence of nitrogen in a compound? (138)
6. How will you test the presence of sulphur in a compound? (139)
7. Explain the estimation method of carbon and hydrogen (140)
8. Explain the estimation method of sulphur (141)
9. How will you estimate Halogens by carius method? (142)
10. How will you estimate phosphorus in the organic compound? (143)
11. Explain the estimation method of Nitrogen by Dumas method (144)
12. Explain the method of column chromatography (151)
13. Explain the method of Thin layer chromatography (152)

12. Basic concepts of Organic reactions

Answer the following questions briefly: (2 or 3 Marks)

1. What are homolytic and heterolytic cleavages? (162)
2. What is the hybridization of carbon in carbocation? (163)
3. What are Nucleophiles and electrophiles? (164)
4. What are three types of electron movement? (165)
5. What are the different types of organic reactions? (171)
6. What is displacement reaction? (171)
7. Mention the following substitution reactions i) Nucleophilic ii) Electrophilic iii) Free radical (171)
8. What are addition reactions? (172)
9. Mention the following addition reaction i) Electrophilic ii) Nucleophilic iii) Free radical (172)
10. What is elimination reaction? (173)
11. What are oxidation and reduction reactions? (173)

Answer the following questions in detail : (5 Marks)

1. Explain Inductive effect in the organic compounds (166)
2. Explain Electromeric effect (167)
3. Explain resonance or mesomeric effect and its types (168)
4. Explain hyper conjugation effect (170)

13. Hydrocarbons

Answer the following questions briefly: (2 or 3 Marks)

1. How is hydrocarbons classified? (179)
2. What is Sabatier Sendersen reaction? (184)
3. What is decarboxylation? (184)
4. Write note on Kolbe's electrolytic method of preparation of alkanes (184)
5. Write note on Wurtz reaction (184)
6. What is Corey-House mechanism? (185)
7. How are alkanes prepared by Grignard reagents? (185)
8. What is aromatization? (189)
9. What is isomerisation? (190)
10. How are alkenes prepared from alkynes by Lindlar's catalyst? (192)
11. State Markovnikoff's rule and give an equation. (194)
12. Explain Anti Markovnikoff's rule or Kharasch addition with mechanism (196)
13. What is ozonolysis? (198)
14. What is polymerization? (199)
15. How is hydrogen halides added with alkyne? (202)
16. Write note on Friedel craft's reaction (210)
17. What is Friedel craft's acylation? (212)

18. Write note on nitration reaction (211)
19. What is Birch reduction? (215)
20. How will you prepare gammaxane or lindane? (215)
21. How is propyne prepared from an alkyene dihalide? (201)
22. How does Huckel rule help to decide the aromatic character of a compound? (205)
23. Suggest a simple chemical test to distinguish propane and propene (194)
24. What happens when isobutylene is treated with acidified potassium permanganate? (198)
25. How will you convert ethyl chloride into i) ethane ii) n – butane (185)
26. Write the chemical equations for combustion of propane (188)
27. What happens when ethylene is passed through cold dilute alkaline potassium permanganate? (198)
28. How will you prepare propane from a sodium salt of fatty acid? (184)
29. How will you distinguish 1 – butyne and 2- butyne? (202,203)

Answer the following questions in detail : (5 Marks)

1. Explain the conformation of n-butane (186)
2. Explain halogenations with mechanism (188)
3. Explain the evidence of structure of benzene (207)
4. Describe the mechanism of nitration of benzene (211,212,213)
5. Suggest the rute for the preparation of the following from benzene
   - i) 3- chloro nitrobenzene
   - ii) 4 – chlorotoluene
   - iii) Bromo benzene
   - iv) m – dinitro benzene

14. Haloalkanes and Haloarenes

Answer the following questions briefly: (2 or 3 Marks)

1. How are organic halogen compounds classified? (226)
2. How is hydrogen halides prepared using Lucas reagent? (230)
3. What is Darzen's halogenation? (231)
4. Write note on Finkelstein reaction or How will you prepare n propyl Iodide from n propyl bromide ? (231)
5. Write note on Swartz reaction (231)
6. Why chlorination of methane is not possible in dark? (231)
7. What is Hunsdiccker reaction? (231)
8. What is ammonolysis? (233)
9. How does haloalkanes reacts with silver nitrite? (234)
10. What is Williamson ether synthesis? (234)
11. What is E2 mechanism? (237)
12. How is Grignard reagent prepared? (239)
13. Write note on sandmeyer reaction (242)
14. What is Balz Schiemann reaction? (242)
15. What is Dow's process? (243)
16. Write note on Wurtz Fittig reaction (244)
17. Write Fittig reaction How does chlorobenzene react with sodium in the presence of ehther? (244)
18. What are the uses of chloro benzene? (244)
19. How will you prepare gem dihalides? (245)
20. Which reaction is used to distinguish gem dihalides and Vic-Dihalides? (246)
21. What is dehalogenation? (246)
22. What is dehydrogenation? (246)
23. How will you prepare chloroform? (247)

24. How is phosgene prepared from chloroform? (248)
25. How will you prepare chloropicrin? (248)
26. What is carbylamine reaction? (248)
27. What happens when chloroform reacts with oxygen in the presence of sunlight? (248)
28. What are Freons? Discuss their uses (250)
29. How is DDT prepared? (250)
30. What are the uses of DDT? (251)

Answer the following questions in detail : (5 Marks)

1. Write note on Raschig process or commercial preparation of chloro benzene (242)
2. Explain bimolecular Nucleophilic substitution reaction (SN2) (235)
3. Explain unimolecular nucleophilic substitution reaction (SN1) (236)
4. Explain E1 mechanism (237)
5. Explain the synthetic uses of Grignard reagents. (239)
6. Discuss the atromatic nucleophilic substitution reaction of chlorobenzene (243)

15. Environmental Chemistry

Answer the following questions briefly: (2 or 3 Marks)

1. What is environmental pollution? (260)
2. What are biodegradable and non biodegradable pollutants? (260)
3. What is greenhouse effect? (263)
4. What is global warming? (263)
5. What is acid rain? (264)
6. What are harmful effects of acid rain? (264)
7. What are particulate pollutants? (265)
8. What is smog? (266)
9. What is classical smog or London smog? (266)
10. What are the effects of classical smog? (267)

11. What is photochemical smog or Los Angel Smog? (267)
12. What are the effects of photochemical smog? (268)
13. What is depletion of ozone layer or ozone hole? (268)
14. What are freons? (269)
15. What are the environmental impact of ozone depletion? (269)
16. Define Eutrophication (271)
17. What is Biochemical oxygen demand (BOD)? (271)
18. What is chemical oxygen demand(COD)? (271)
19. What are the harmful effects of chemical water pollutants? (271)
20. Mention the standards prescribed by BIS for qualities of drinking water. (272)
21. What are the total dissolved solids? (273)
22. What is artificial fertilizers? (271)
23. What is Green Chemistry? (275)

Answer the following question in detail: (5 Marks)

1. Explain the strategies to control environmental pollution (274)

----ALL THE BEST----

Time + Effort=Success

Note:

- ✓ I hope this material will be useful for practice except sums
- ✓ But the Annual exam questions will be based on creative and higher order thinking (HOT) manner not as direct questions
- ✓ If any mistakes or your suggestions, please send your valuable thoughts to that whatsapp number or email id to help the students

DEDICATED TO : ALL THE TEACHERS AND STUDENTS

G. SURESH M.Sc, M.A, B.Ed,

P.G. ASSISTANT IN CHEMISTRY

THE CRESCENT MATRIC HR.SEC.SCHOOL

UTHAMAPALAYAM

THENI [DT]

CONTACT :

26/GANDHI NAGAR, CHINNAMANUR

THENI [DT]

PH: 9943040503

E mail: vivekasuresh@gmail.com

"THANK GOD AND THANK YOU ALL"
"ALL THE BEST"