ACTC ADVANCED CHEMISTRY TUITION CENTRE, 41/1-PWD ROAD, NAGERCOIL 9940847892

+1 CHEMISTRY IMPORTANT QUESTIONS- SECOND MID TERM 2023

II-MIDTERM QUESTION PATTERN - 2023 (CHEMISTRY +1)

MCQ	8	8x1=8
2MARK	4/6	4x2=8 (1Q COMPULSORY)
3MARK	3/5	3x3=9 (1Q COMPULSORY)
5MARK	2/4	2x5=10
	TOTAL	35 MARKS

EXAM PORTION- SECOND MID TERM EXAM 2023

UNIT 5 ALKALI AND ALKALINE EARTH METALS

UNIT 9 SOLUTION

UNIT 10 CHEMICAL BONDING

UNIT 13 HYDROCARBON

INORGANIC CHEMISTRY

Lesson 5 ALKALI AND ALKALINE EARTH METALS

1. General characteristics of alkali metals. **Or** 1s block elements.(126)
2. Distinctive (anomalous) behavior of Lithium. (129)
3. Discuss the Similarities between Lithium and Magnesium. (129) **J22 5M**
4. Among the alkali metal halides, which is covalent? Explain with reason.(130)**(J19)**
5. Why blue colour appears during the dissolution of alkali metals in liquid ammonia?(130) **J19 5Mi**
6. Uses of alkali metals. (131)
7. Except LiF, all other halides are soluble in water. Why? (132)
8. Write the chemical equations for the reactions involved in **Solvay process** of preparation of sodium carbonate (washing soda). (132)
9. What is soda ash? Write equations. (133)
10. Uses of washing soda? (133)
11. Explain preparation, uses of cooking salt. (133,134)
12. Explain preparation, uses of sodium hydroxide. (134)
13. What are the uses of sodium bicarbonate. (134) **J23 5Mii**
14. Explain biological importance of sodium and magnesium. (135)

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15. General characteristics of alkaline earth metals. Or 2s block elements(136)
16. Distinctive (anomalous) behavior of Beryllium. (139)
    (What are the reasons for the anomalous properties of Beryllium? (139)**M22 5Mi)**
17. Explain the properties of Beryllium that are difference from other elements of the group. 139 **M22 5Mii**
18. Give any three similarities between beryllium and aluminum. **(140) (MQ19, J19, J23 3M)**
19. Among the alkaline earth metals BeO is insoluble in water but other oxides are soluble. Why? 142 **(M19 5Mi)**

ANSWER:

(i) **BeO is insoluble in water**
BeO is covalent in nature, While other alkaline earth metal oxides are ionic in nature

20. Uses of alkaline earth metals Mg **(S20 5Mii),** Ca **M23 5Mii**, Sr, Ba, Ra. (141)
21. Explain preparation, properties and uses of Quick lime. (144)
22. Explain preparation, properties and uses of calcium hydroxide. (144)
23. How is bleaching powder prepared? 145 **S20 5Mi**
24. Explain why $Ca(OH)_2$ is used in white washing. (145) **M19 3M**
25. Explain properties and uses of Gypsum. (145)
26. Plaster of Paris preparation and uses. (147) **(MQ19) M23 2M**
27. Explain biological importance of magnesium and calcium. **(148)**
28. Write the balanced equation for each of the following chemical reactions.
    (i) Reaction of metallic Lithium with Nitrogen gas **(MQ19) BB 154**
    (ii) Heating solid sodium bicarbonate.
    (iii) Rubidium with oxygen gas.
    (iv) Solid potassium hydroxide with CO_2
    (v) Heating calcium carbonate.
    vi)Heating calcium with oxygen. **& study all book back question & answer**

PHYSICAL CHEMISTRY

9. Solutions

1. Define solution, solute, solvent. (31)
2. Explain the different type of solutions based on the physical state of the solute and solvent. (31)
3. Define Molality **J23 3M** and Molarity (32)
4. Define Normality and Formality (32)
5. Define Mole fraction and Mass percentage (33)
6. Calculate the mole fraction of methanol and water when 0.5mole of methanol is mixed with 1.5moles of water. (33) **S20 3MARK**
7. Define Molarity. If 5.6 g of KOH is present in 250 ml of the solution, calculate the molarity of the solution. (34) **(MQ19)**

8. Define volume percentage and mass by volume percentage (34)
9. Define parts per million (34)
10. 50g of tap water contains 20mg of dissolved solids. what is the TDS value in ppm?(34) **J22 2M**
11. What are the advantages of using standard solutions? (35)
12. What are standard and working solutions? (35)
13. Define solubility (36)
14. What are the factors influencing the solubility? (36)
15. What is the nature of solute and solvent? (36)
16. How does temperature affect the solubility? (36)
17. Draw and explain the graph obtained by plotting solubility versus temperature for calcium chloride. (37) **J19 5Mii**
18. How does the pressure affect the solubility? (38)
19. State Henry's law (38)
20. NH_3 and HCl do not obey Henry's law. Why?(38) **M19 5Mi**
21. What are the limitations of Henry's law? (40) **M23 5Mii**
22. Define vapour pressure (41)
23. State Raoult's law (43)
24. How will you compare Raoult's law with Henry's law? (45)
25. What are conditions when a solution tends to behave like an ideal solution? (46) **J22 3M**
26. What are the conditions for Non ideal solutions? (46)
27. Explain the positive deviation of non-ideal solutions (46)
28. Explain the negative deviation of non-ideal solutions (47)
29. Explain the factors responsible for deviation from Raoult's law (48)
30. What are colligative properties? (49) **J23 5Mii**
31. What is relative lowering of vapour pressure? (49)
32. Determination of Molar mass weights from relative lowering of vapour pressure (50) Or Write the formula to calculate the molar mass of a solute from relative lowering of vapour pressure values. (50) **(M22 3M)**
33. Determination of molar mass of solute from elevation of boiling point (52) **M22 5M**
34. What is Ebullioscopic constant? (52)
35. Determination of molar mass of solute from depression in freezing point (54)
36. What is Cryoscopic constant? (54)
37. Define osmosis (55)
38. Define osmotic pressure? (55) **M23 2M**
39. What is isotonic solution? (56) **M19 3MARK, M22 2M**
40. Determination of molar mass from osmotic pressure (56)
41. Explain the application of reverse osmosis in water purification (57)
42. Define reverse Osmosis (57)
43. What is abnormal molar mass? (58)

44. What is Van't Hoff factor 'I'? (58) **S20 5Mi**
45. Calculate the mass of non-volatile solute (molar mass 80 $gmol^{-1}$) which should be dissolved in 92 g of toluene is reduced to its Vapour pressure to 90%. BBQ20 63**(MQ19)**

10. Chemical Bonding

1. State Octet rule (69)
2. What is covalent bond? (61)
3. Draw the Lewis dot structures for sulphur trioxide. (71) **(MQ19)** Study Lewis dot structure of H_2O, NH_3, CH_4, N_2O_5, HNO_2, H_3PO_4, NO_3^-, SO_4^{2-}, HNO_3, O_3. **M23 2M (water, nitric acid)**
4. How will you find formal charge of an atom? (72)
5. What are the molecules not obeying the octet rule? (73)
6. What is ionic or electrovalent bond? (74)
7. Explain the ionic bond formation in KCl, MgO and CaF_2. (75)
8. What is coordinate covalent bond? (75)
9. What is bond order? (76)
10. Define bond length? (76) **M22 5Mi**
11. What is bond length? Name the techniques through which the length of a bond can be determined. (76) **M19 2M**
12. Define bond angle. **(77) M22 5Mii**
13. Define bond enthalpy (77) **M22 5Miii**
14. What is resonance? (78)
15. Explain the resonance structure of CO_3^{2-} (78)
16. What is dipole moment? (79)
17. What is polar covalent bond? Give an example (79)
18. CO_2 has zero dipole moment even though two polar bonds. Why? (80)
19. How will you find ionic character? (80)
20. What is polarization? (80)
21. Linear form of carbon dioxide molecule has two polar bonds. Yet the molecule has zero dipole moment. Why? (80) **J19 2M**
22. How will you determine the ionic character in covalent bond using electronegativity values? (80) **M22 5M**
23. State Fajan's rule (81) **MQ19, J22 3M, J23 3M**
24. What are the important principles of VSEPR theory? (81)
25. Write the shape and molecular geometry for BF_3. (82) **S20 2M**
26. Predict the shape of $ClF_3 and NH_3$ using VSEPR theory. (83)**(MQ19)**
27. Write the structure of the following compounds. (84) **M19 5Mii**
    a) NH_3 (B) BF_3 **(S20 2M)**
28. Mention the shape of following molecule base on VSEPR theory. (82-84) **J22 5M**
    (i)BF_3 (ii)BrF_3 (iii)PCl_5 (iv)SF_6 (v)IF_7

29. Both C_2H_2 and CO_2 have the same structure. Explain why?. **M19 3MARK**

ANS:

C_2H_2 and CO_2 have same structure In Both of these compounds carbon undergoes 'SP' hybridization. So C_2H_2 and CO_2 have same shape. Linear structure only. ---------- (1)		3

30. Explain the salient features of VB theory (86)
31. Define sigma, Pi bond? (87) **J23 3M COMPULSORY**
32. Explain the formation of H_2, F_2, HF **(M22 3M),** O_2 molecule by overlapping of orbitals (87-89)
33. Draw the hybridization in $BeCl_2$ (90)
34. What is hybridization? (89) Mention the type of hybridisation found in CH_4.(92) **S20 3M**
35. Draw the hybridization in BF_3 (91), CH_4(92), PCl_5 (93), SF_6 (94), ethylene molecule(95), acetylene molecule (96)
36. Explain the salient features of Molecular orbital Theory (99) **S20 5Mii, M23 5M**
37. Explain the molecular formation of the following by MOT i) H_2 ii) Li_2 iii) B_2 iv) C_2 **J22 5M** (99) v) N_2 **J20 5Mi , J23 5M** vi) O_2 vii) CO viii) NO (100)

ORGANIC CHEMISTRY

13. Hydrocarbons

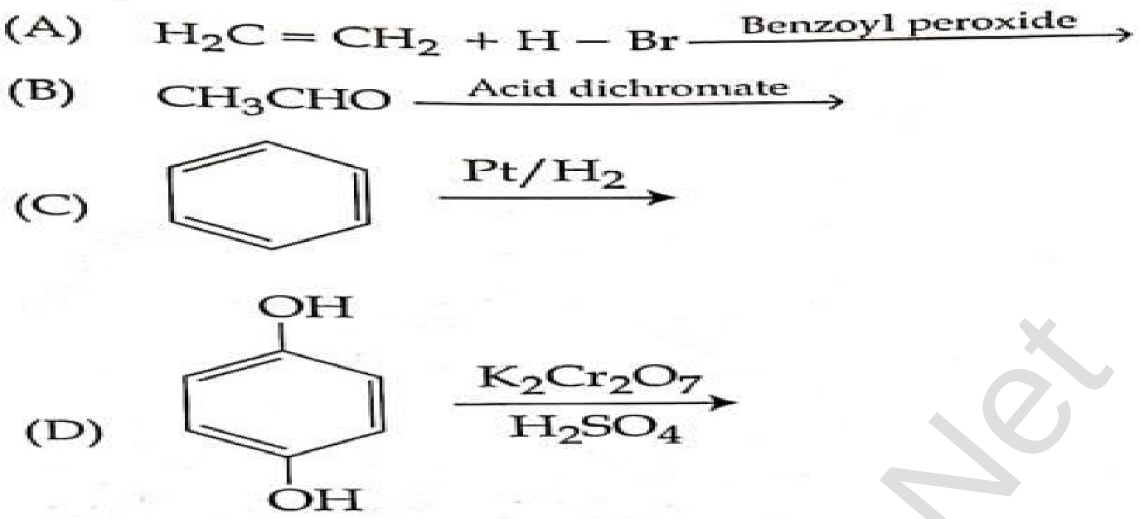
1. How are hydrocarbons classified? (179)
2. Write the IUPAC name for the following compound. 181 **M19 5Mi**

(A) $CH_3 - \underset{\displaystyle CH_3}{\underset{|}{CH}} - CH_2 - CH_3$ (B) $H_3C - \underset{\displaystyle CH_3}{\underset{|}{\overset{\displaystyle CH_3}{\overset{|}{C}}}} - CH_3$

3. Write the structural formula and carbon skeleton for all possible chain isomers of C_4H_{10}, C_5H_{12}, C_6H_{14}. (181,182)
4. What is Sabatier Sendersen reaction? (184)
5. What is meant by Decarboxylation? decarboxylation of sodium acetate. (184)
6. Wurtz reaction. (184)
7. How will you convert ethyl chloride in to i) ethane **(M22 2M)** ii) n – butane (bb) (184)
8. Corey house mechanism. (185)
9. Write note on Kolbe's electrolytic method of preparation of alkanes (184) **J22 2M**
10. How is **Alkane** (methane) prepared from Grignard reagent. (185) **M19 2M**
11. Write note on confirmation of ethane, Butane. (186, 187)
12. Write the chemical equations for combustion of propane.(bb)(188)
13. Define pyrolysis. Give an example. (189)

14. Uses of alkane. (190)
15. Explain Geometrical isomerism of 2-butene. (191) **S20 3M COMPULSORY**
16. How are alkenes prepared from alkynes by Lindlar's catalyst? (192)
17. $CH_3CH_2Cl \xrightarrow{Conc H_2SO_4\ 430-440K} A \xrightarrow{HBr\ Benzoyl\ peroxide} B$ 192, 195 **J23 2MCOM**
18. Suggest a simple chemical test to distinguish propane and propene.(bb)(194)
19. Explain Markownikoff's rule with suitable example.(194)
20. An organic compound (A) C_2H_4 decolourises bromine water.(A) on reaction with chlorine gives (B). (A) reacts with HBr to give (C). Identify (A) , (B) and (C).Explain the reactions. (194) **J22 5M**
21. What happens when isobutylene is treated with acidified potassium permanganate? (bb)(198)
22. What happens when ethylene is passed through cold dilute alkaline potassium permanganate. (197-198) **M22 3M**
23. An organic compound (A) of molecular formula C_2H_6O, on heating with conc. H_2SO_4 gives compound (B). (B) on treating with cold dilute alkaline $KMnO_4$ gives compound (C). Identify (A), (B) and (C) and explain the reactions. (197) **J20 5Mi**
24. Ozonolysis of alkene. (198) **J19 2M**
25. What is polymerization? preparation of polyethene. (199) **J19 3M**
26. Complete the reaction: $CaC_2 \xrightarrow{H2O}$ 202 **J23 5Mi**
27. Explain the different types of polymerisation in ethyne. 204 **S20 3M**
28. How does Huckel rule help to decide the aromatic character of a compound. (205) **J23 3M**
29. Explain the evidence of structure of benzene (207) **M23 5M**
30. Write any two different components you gets during fractional distillation of Coal tar at any two different temperatures. (209) **M19 5Mii**
31. Explain preparation of benzene (3methods) (210)
32. Electrophilic substitution reaction of benzene
(Nitration, halogenation, Sulphonation, Methylation, Acetylation) (211-212)
33. How will you get the following products with the given reactants? (210) **M19 5Mi**
    (A) Acetylene → Benzene
    (B) Phenol → Benzene
    (C) Benzene → Toluene
34. How will you prepare the following compounds from benzene? **M22 5M**
(i)Nitrobenzene (ii)Benzene sulphonic acid (iii)BHC
35. The simple Aromatic Hydrocarbon compound (A) reacts with Bromine to give (B). Compound (A) reacts with Raney Ni and gives (C). Identify (A), (B) and (C). (211,215) **M19 5Mii**
36. Wurtz-Fittig reaction.(210)
37. Fridel crafts reaction. (210) **M23 2M**
38. Preparation of BHC. & uses. (215)
39. Describe the mechanism of nitration of benzene (211,212,213)

40. Describe the mechanism of Nitration of benzene. (214)
41. Brich reduction(215) **J19 5Mii, S20 5Mii, J22 3M**
42. Complete: 195, 215 **S20 5Mi**



43. Write short notes on ortho, para directors in aromatic electrophilic substitution reactions. (216)
44. Write short notes on meta directors in aromatic electrophilic substitution reactions. (216)

& study well BOOK exercise questions.

14. Haloalkanes and Haloarenes

1. How are organic halogen compounds classified? (226)
2. IUPAC NAME, common name (228)
3. Nature of C-X bond in haloalkane. (229)
4. How are hydrogen halides prepared using Lucas reagent? (230)
5. Mention any two methods of preparation of haloalkanes from alcohols? (230) **J22 2M**
6. What is Darzen's halogenation? (231)
7. Write note on Finkelstein reaction or (How will you prepare n propyl Iodide from n propyl bromide?) (231)
8. Chlorination of methane. (231)
9. Write note on Swartz reaction (231)
10. Why chlorination of methane is not possible in dark? (231)
1. What is Hunsdiccker reaction? (231)
2. Physical properties. (Boiling point and melting point, solubility, density) 232
3. What is ammonolysis? (233)
4. How does haloalkanes reacts with silver nitrite? (234)
5. What is Williamson ether synthesis? (234) **M19 3M**
6. Explain S_N2 mechanism. (234)
7. Explain S_N1 mechanism. (234)
8. Explain E2 mechanism. (236)

9. Explain E1 mechanism. (236) (Explain the mechanism involved in the elimination reaction of tertiary butyl chloride with alcoholic KOH. **S20 5M)**
10. How is Grignard reagent prepared? ALL USES (239)
    Starting from CH_3MgI, how will you prepare the following?
    a) Ethylalcohol b) Acetaldehyde c)ethyl methyl ether **M23 5Mi**
11. What happens when acetyl chloride is treated with excess of CH_3MgI. (239) **J23 2M**
12. Starting from CH_3MgI, how will you prepare the following? (239) **J22 5M**
    (i) Acetaldehyde (ii) Acetone (iii) Methane
13. Write note on sandmeyer reaction (242)
14. What is Balz Schiemann reaction? (242)
15. Raschig process.(242)
16. Among the following compounds, o-dichloro benzene and p-dichloro benzene, which has higher melting point? Explain with reason.(243) **J19 5Mii**
17. What is Dow's process? (243)
18. Write note on Wurtz Fittig reaction (244)
19. Write Fittig reaction. (How does chlorobenzene react with sodium in the presence of ether?) (244)
20. Complete the following reactions. (243,244) **M22 2M COMPULSORY**

    i) $C_6H_5Cl + 2NH_3 \xrightarrow{250°C\ 50atm}$

    ii) $C_6H_5Cl + 2Na + ClC_6H_5 \xrightarrow{Ether}$

21. Discuss the aromatic nucleophilic substitution reaction of chlorobenzene (243)
22. What are the uses of chloro benzene? (244)
23. A simple aromatic hydrocarbon (A) reacts with chlorine to give Compound (B). Compound (B) reacts with ammonia to give Compound (C) which undergoes carbylamine reaction. Identify (A), (B) and (C) and explain the reactions. (242, 243) **J20 5Mii**
24. How will you prepare gem dihalides? (245)
25. Which reaction is used to distinguish gem dihalides and Vic-Dihalides? (246)
26. What is dehalogenation? (246)
27. What is dehydrogenation? (246)
28. How will you prepare chloroform? (247)
29. How is phosgene prepared from chloroform? (248)
30. How will you prepare chloropicrin? (248)
31. What is carbylamine reaction? (248)
32. What happens when chloroform reacts with oxygen in the presence of sunlight? (248)
33. What are Freons? Discuss their uses (250)
34. How is DDT prepared? (250)
35. Give the structure and uses of DDT? (251) **S20 2M, J23 5Mii**
36. Explain the preparation of the following compounds BB

i) DDT ii) Chloroform iii) Biphenyl iv) Chloropicrin v) Freon-12

37. An organic compound (A) with molecular formula C_2H_5Cl reacts with KOH gives compounds (B) and with alcoholic KOH gives compound (C). Identify (A),(B), and (C). BB **M23 3M**
38. Simplest alkene (A) reacts with HCl to form compound (B).Compound (B) reacts with ammonia to form compound (C) of molecular formula C_2H_7N.Compound (C) undergoes carbylamine test. Identify (A), (B), and (C). BB **M22 5M**
39. A hydrocarbon C_3H_6 (A) reacts with HBr to form compound (B). Compound (B) reacts with aqueous potassium hydroxide to give (C) of molecular formula C_3H_6O.what are (A) (B) and (C). Explain the reactions. BB
40. Two isomers (A) and (B) have the same molecular formula $C_2H_4Cl_2$. Compound (A) reacts with aqueous KOH gives compound (C) of molecular formula C_2H_4O. Compound (B) reacts with aqueous KOH gives compound (D) of molecular formula $C_2H_6O_2$. Identify (A),(B),(C) and (D).

IMPORTANT MCQ & ANSWER 2023

Unit 5 Alkali and Alkaline earth metals

1. Find A in the following equation $CaO + 3C \xrightarrow{3273\ K} A + CO$ **M19**
   a) CaC_2 b) CO_2 c) Ca d) CaO
2. Which compound is named as "Blue John" among the following compounds?
   a) $Ca_3(PO_4)_2$ b) CaO c) CaH_2 d) CaF_2
3. When CaC_2 is heated in atmosphere nitrogen in an electric furnace, the compound formed is__. **J19** a) $Ca(CN)_2$ b) CaNCN c) CaC_2N_2 d) $CaNC_2$
4. Formula of Gypsum is **S20**
   a) $CaSO_4$ b) $CaSO_4.2H_2O$ c) $CaSO_4.1/2\ H_2O$ d) $CaSO_4.H_2O$
5. Spodumene is the mineral source for which of the following alkali metal? **M22**
   (a)Lithium (b)Sodium (c)Rubidium (d)Potassium
6. Which of the following has highest hydration energy? **M22**
   (a)$BaCl_2$ **(b)$MgCl_2$** (c)$SrCl_2$ (d)$CaCl_2$
7. Among the following the least thermally stable is : **J22**
   (a)K_2CO_3 (b)Na_2CO_3 (c)$BaCO_3$ (d)Li_2CO_3
8. _____is used in devising photo electric cells **J22**
   (a)Lithium (b)Sodium (c)Potassium (d)Caesium
9. sodium is stored in **M23 BB**
   a) alcohol b) water **c) kerosene** d) none of these
9. Match the flames colors of the alkali and alkaline earth metals salts in the bunsen burners. **J23**

(1)Sodium	(i)Blue
(2)Caesium	(ii)Apple green

(3)Calcium (iii)Yellow
(4)Barium (iv)Brick red
(a)(1)-(iii),(2)-(iv),(3)-(i),(4)-(ii)
(b)(1)-(i),(2)-(ii),(3)-(iv),(4)-(iii)
(c)(1)-(iii),(2)-(i),(3)-(iv),(4)-(ii)
(d)(1)-(ii),(2)-(i),(3)-(iv),(4)-(iii)

UNIT 9 Solutions

1. Osmotic pressure (π) of a solution is given by the relation: M19, S20, M23 BB
   a) πRT b) V = nRT c) π = nRT **d) πV= nRT**
2. **Assertion:** Mixture of carbon tetrachloride and chloroform show positive deviation from Raoult's Law. J19
   Reason: In the mixture, the inter molecular force of attraction between chloroform and carbon tetrachloride is weaker than those between molecules of carbon tetrachloride and chloroform molecules.

a) Both assertion and reason are correct and reason is the correct explanation of assertion.
b) Both assertion and reason are correct and reason is not the correct explanation of assertion.
c) Both assertion and reason are false d) Assertion is true, but reason is false.

3. Equimolar aqueous solution of NaCl and KCl are prepared .If the freezing point of NaCl is -2°C,the freezing point of KCl solution is expected to be : M22
   (a)-1°C **(b)-2°C** (c)0°C (d)-4°C
4. Which one of the following binary liquid mixtures exhibit positive deviation from Raoult's law J22

(a)Acetone+Chloroform (b)Water+Nitric acid (c)HCl+Water (d)Ethanol+Water

5. Normality of 1.25 M sulphuric acid is: J23
   (a)1.25N (b)3.75N **(c)2.5N** (d)2.25N
6. Solubility of carbon dioxide gas in cold water can be increased by M23
   a) increase in pressure b) decrease in pressure c) increase in volume d) none of these

UNIT 10 Chemical bonding

1. Which of the following molecule does not contain π bond? M19
   a) CO_2 **b) H_2O** c) SO_2 d) NO_2
2. Shape and Hybridisation of IF_5 are: J19
   a) Trigonal bipyramidal, sp^3d^2 b) Trigonal bipyramidal, sp^3d
   c) Square pyramidal, sp^3d^2 d) Octahedral, sp^3d^2
3. Which one of the following is diamagnetic? M22
   (a)O_2^{2-} (b)O_2^+ (c)O_2 (d)None of these
4. The ratio of number of sigma(π) and pi(π) bonds in 2-butynal is : J22

(a)8/3 (b)5/3 (c)8/2 (d)9/2

5. **Assertion:** Oxygen molecule is paramagnetic. M23

Reason : It has two unpaired electron in its bonding molecular orbital

a) both assertion and reason are true and reason is the correct explanation of assertion

b) both assertion and reason are true but reason is not the correct explanation of assertion

c) assertion is true but reason is false d) Both assertion and reason are false

6. According to valance bond theory a bond between two atoms is formed when : **J23**

(a)fully filled atomic orbital overlap **(b)half-filled atomic orbital overlap**

(c)non-bonding atomic orbitals overlap (d)empty atomic orbital overlap

UNIT 13 Hydrocarbons

1. ____ group is ortho para directing and deactivating group **J19**

a) amino b) methyl **c) halogen** d) aldehyde

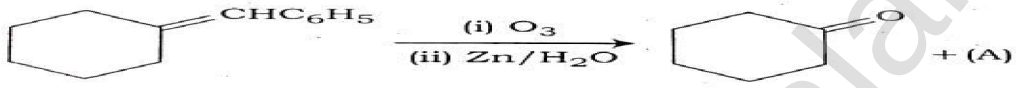
2. Cold dilute alkaline $KMnO_4$ is known as: **S20**

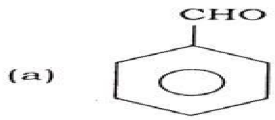
a) Schiff's reagent b) Fenton's reagent c) Tollen's reagent **d) Baeyer's reagent**

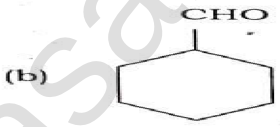
3. Which of the following is aliphatic saturated hydrocarbon? **M22**

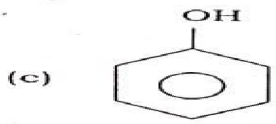
(a)C_9H_{18} (b)C_8H_{14} **(c)C_8H_{18}** (d)All the above

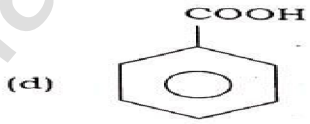
4. Identify the compound (A) in the following reaction : **J22**



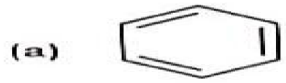








5. Which one of the following is aromatic? **M23 ANS a**



(d) both (a) and (b)

6. The compound formed at anode in the electrolysis of an aqueous solution of potassium acetate are: **J23**

(a)CH_4 and H_2 (b)CH_4 and CO_2 **(c)C_2H_6 and CO_2** (d)C_2H_4 and Cl_2

UNIT 14 Haloalkanes and Haloarenes

1. Match the following: **M19**

1) Chloro picrin (i) Detection of primary amine

2) Methyl Isocyanide (ii) DDT

3) Chloro benzene (iii) Paint remover

4) Methylene chloride (iv) Soil sterilizer

a) (1) – (iv), (2) – (iii), (3) – (ii), (4) – (i) b) (1) – (iii), (2) – (iv), (3) – (ii), (4) – (i)

c) (1) – (i), (2) – (ii), (3) – (iv), (4) – (iii) **d) (1) – (iv), (2) – (i), (3) – (ii), (4) – (iii)**

2. The raw material for Rasching process is_____. **J19**

a) chloro benzene b) phenol c) benzene d) anisole

3. n-propyl bromide on reaction with alcoholic KOH gives: **S20**

a) Butyl alcohol b) Propene c) Butene d) Propyl alcohol

4. Assertion: In monohaloarenes, electrophilic substitution occurs at ortho an para positions . **M22**

Reason: Halogen atom is a ring deactivator.

(a)Assertion is true but reason is false

(b)Both assertion and reason are true and reason is the correct explanation of assertion.

(c)Both assertion and reason are false

(d)Both assertion and reason are true but reason is not the correct explanation of assertion.

5. Assertion : Increase order of boiling points of the halo alkanes are $CH_3Cl < CH_2Cl_2 < CHCl_3 < CCl_4$

Reason: The boiling points of halo alkanes increase with increase in the number of halogen atoms. **J22**

(a) Assertion is true but reason is false

(b) Both assertion and reason are true and reason is the correct explanation of assertion

(c)Both assertion and reason are false

(d)Both assertion and reason are true but reason is not the correct explanation of assertion

6. Chloroform reacts with nitric acid to produce **M23 BB**

a) nitro toluene b) nitro glycerine **c) chloropicrin** d) chloropicric acid

14.The name of $C_2F_4Cl_2$ is _____. **J23**

(a)Freons-112 (b)Freons-113 **(c)Freons-114** (d)Freons-115

Class : 11

Register Number

SECOND MID TERM TEST - NOVEMBEER - 2022

Time Allowed : 1.30 Hours] **CHEMISTRY** [Max. Marks : 50

PART – A 10 X 1 = 10

I. Answer all the questions.

1. Sodium salts gives _____ colour to the flame.
   a) Crimson red b) blue c) yellow d) violet
2. _____ is called baking soda.
   a) $NA_2CO_3.10\ H_2O$ b) Nacl c) $NaHCO_3$ d) HNO_3
3. The Van't Hoff factor (i) for a dilute aqueoussolution of the strong elecrolyte barium hydroxide is _____
   a) 0 b) 1 c) 2 d) 3
4. Which of the following can be used as the halide component for friedal - craftsreaction?
   a) Chloro benzene b) Bromo benzene c) chloroethane d) isoprophyl chloride
5. Which of the following is optically active?
   a) 2 - methyl pentane b) Citric acid
   c) Glycerold d) none of these
6. Which among the following alkeneson reductive ozonolysis produce only propane?
   a) 2 - methyl propene b) 2 - methyl but - 2- ene
   c) 2,3 - Dimethyl but - 1 - ene d) 2,3 - Dimethyl but - 2 - ene
7. Which one of the following gases has the lowest value of Henry's law contstant?
   a) N_2 b) He c) CO_2 d) H_2
8. Which of the following has highest hydration energy?
   a) $MgCl_2$ b) $CaCl_2$ c) $BaCl_2$ d) $SrCl_2$
9. **Assertion :** Generally alkali and alkaline earth metals form superoxides.
   Reason : There is a single bond between O and O in superoxides.
   a) Both assertion and reason are true and reason is the correct explanation of assertion
   b) Both assertion and reason are true but reason is not the correct explanation of assertion
   c) assertion is true but reason is false
   d) Both assertion and reason are false
10. Cyclopentadiene is a / an ------ compound.
    a) aromatic b) non - aromatic c) anti - aromatic d) alicyclic

PART – B 5 X 2 = 10

II. Answer any 5 questions. Question number 17 is compulsory. Answer any 4 from the remaining.

11. Why gypsum is referred to as **'desert rose'?**
12. How will you identify the unsaturated hydrocarbons?

13. Define the term **'isotonic solution'.**
14. Find the molality of the solution containing 45 g of glucose dissolved in 2 kg of water.
15. Write note on anomalous nature of Lithium.
16. What is osmosis?
17. Draw the structural formula for 4,5 - diethyl - 3,4,5 - trimethyl octane.

PART – C **5 X 3 =15**

III. Answer any 5 questions. Question number 24 is compulsory. Answer any 4 from the remaining.

18. Explain Markovnikov's rulde with an example.
19. Define (i) Molarity (ii) Normality
20. Write Dow's process.
21. Explain the effects of pressure on the solubility.
22. Give the uses of gypsum.
23. Differnetiate Ideal and non - ideal solution.
24. 0.24 g of a gas dissolves in 1 L of water at 1.5 atm pressure. Calculate the amount of dissolved gas when the pressure is raised to 6 atm at constant temperature.

PART – D **3 X 5 =15**

IV. Answer all the questions.

25. a. State Henry's lawand explain its limitations.

(or)

b. Explain the structural elucidation of Benzene.

26. a. i. Discuss the similarities between beryllium and aluminium. (3)

ii. Write Birch reduction (2)

(or)

b. i. How will you prepare Lindane? Write its use? (3)

ii. State Raoult's law (2)

27. a. **Write the following reactions.**

i. Friedel Craft's acetylation (3)

ii. Wurtz reaction (2)

(or)

b. i. How is plaster of paris prepared? Write its uses. (3)

ii. Write Huckel's rule (2)

Tsi11Che

Tenkasi District Common Examinations
Common Second Mid Term Test - November 2022

Standard 11
CHEMISTRY

Time: 1.30 Hrs. Marks: 35

Part - I

Note: i) Answer ALL the questions. **10×1=10**

ii) Choose the most suitable answer from the given four alternatives and write the option code and the corresponding answer.

1) Which of the following has highest hydration energy?
a) $MgCl_2$ b) $CaCl_2$ c) $BaCl_2$ d) $SrCl_2$

2) Among the following aqueous solution, which has lowest boiling point
a) 0.1M $C_6H_{12}O_6$ b) 0.1M KCl
c) 0.1M $BaCl_2$ d) 0.1M K_2SO_4

3) 5.845g of Sodium Chloride is dissolved in water and the solution was made up to 500ml using standard flask. The strength of the solution in molarity is
a) 0.2M b) 2M c) 0.5M d) 5M

4) **Match the following:**

A) Quick lime	-	i) $CaSO_4$ $\frac{1}{2}H_2O$
B) Plaster of Paris	-	ii) CaO
C) Slaked lime	-	iii) $CaSO_4.2H_2O$
D) Gypsum	-	iv) $Ca(OH)_2$

a) A-i, B-ii, C-iii, D-iv b) A-iv, B-i, C-ii, D-iii
c) A-iii, B-ii, C-iv, D-i d) A-ii, B-i, C-iv, D-iii

5) Identify a reagent - from the following list which can easily distinguish between 1-butyne and 2-butyne.
a) Ammoniacal Cu_2Cl_2 solution b) Bromine, CCl_4
c) H_2-lindlar catalyst d) dilute H_2SO_4, $HgSO_4$

6) The treatment of ethylformate with excess of RMgX gives
a) RCOR b) RCH(OH)R c) RCHO d) R-O-R

7) B.O.D. value less than 5ppm indicates a water sample to be
a) highly polluted b) poor in dissolved oxygen
c) rich in dissolved oxygen d) low C.O.D

8) General formula for cyclo alkanes
a) C_nH_{2n-2} b) C_nH_{2n} c) C_nH_{2n-1} d) C_nH_n

9) Which of the following concentration terms is/are independent of temperature?
a) Molality b) Molarity c) Mole fraction d) a & c

10) Among the following which is meta directing group?
a) $-OCH_3$ b) -COR c) $-CH_3$ d) -OH

Part - II

Answer any three questions. Q.No. 13 is compulsory: **3×2=6**

11) Calculate the molecular mass of glycerine if its solution containing 10gm of glycerine per litre is Isotonic with 2% of glucose.

12) Write the bad effects of acid rain.

13) Define co-ordinate covalent bond. Give example.

14) Which bond is stronger σ or π? Why?

15) Write Kolbe's electrolytic reaction.

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B. SARANYA MUTHUSAMY BE., BEd., You Tube: ACTC Chemistry Whatsapp: 9940847892

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Part - III

Answer any three questions. Q.No. 18 is compulsory: 3×3=9

16) Write any three important principles of VSEPR theory.

17) What are Freons? Discuss their uses.

18) The observed depression in freezing point of water for a particular solution is 0.093°C. Calculate the concentration of the solution in molality. Given K_f for water is 1.86 $K.Kg.mol^{-1}$.

19) What is BHC? Give its preparation and one use.

20) Draw MO diagram of CO and calculate its bond order.

Part - IV

Answer all the questions: 2×5=10

21) a) i) Describe briefly the biological importance of Calcium and Magnesium. (3)

ii) Write note on desert rose. (2)

(OR)

b) i) What is Vant Hoff factor? What possible value can it have if the solute molecules undergo (a) dissociation (b) association. (3)

ii) What happens when red-blood corpuscles (RBC) are placed in (a) 0.5% NaCl solution (b) 1% NaCl solution (2)

22) A) Explain SN^1 reaction mechanism with example. (5)

(OR)

B) How does Huckel rule help to decide the aromatic character of compound? Give example. (5)

"NO PAIN, NO GAIN".

Never Dreamed about success, Worked for It.

"May God's guidance be with you during the Exam and may you be able to answer each question correctly. My prayers and Blessings are with you".- ACTC EMS