

BASIC CONCEPT IN ORGANIC CHEMISTRY

- 1) The weights of C, H, & O in the organic compound are in the ratio 6:1:8 respectively. The empirical formula of the compound is
- 1) CH_2O 2) CHO 3) $\text{C}_2\text{H}_3\text{O}_4$ 4) C_3HO_8
- 2) Sodium extract is heated with conc. HNO_3 before testing for halogens because
- 1) Silver halides are insoluble in HNO_3
2) Na_2S and NaCN are decomposed by HNO_3
3) Ag_2S is soluble in HNO_3
4) AgCN is soluble in HNO_3
- 3) A compound contains 76.6% C and 6.38% H. Its vapour density, is 47. Its molecular formula is
- 1) $\text{C}_3\text{H}_3\text{O}$ 2) $\text{C}_6\text{H}_6\text{O}$ 3) C_6H_{10} 4) C_3H_{10}
- 4) A dibasic acid containing C, H, O was found to contain C=26.7% and H=2.2%. The vapour density of diethyl ester was found to be 73. What is the molecular formula of the acid?
- 1) CH_2O_2 2) $\text{C}_2\text{H}_2\text{O}_4$ 3) $\text{C}_3\text{H}_3\text{O}_4$ 4) $\text{C}_4\text{H}_4\text{O}_2$
- 5) Nitration is easiest for
- 1) phenol 2) benzaldehyde 3) benzoic acid 4) nitrobenzene
- 6) Which of the following will undergo meta-substitution on monochlorination?
- 1) Ethoxybenzene 2) chlorobenzene 3) Ethyl benzene 4) Phenol
- 7) During Lassaigne's test which one of the following will not give blood red colour?
- 1) Thiourea 2) o-anilinesulphonic acid
3) p-aniline sulphonic acid 4) Benzene sulphonic acid
- 8) ClCH_2COOH is heated with fuming HNO_3 in the presence of AgNO_3 in Carius tube. After filtration and washing the precipitate obtained is
- 1) AgCl 2) AgNO_3 3) Ag_2SO_4 4) $\text{ClCH}_2\text{COOAg}$
- 9) Sodium extract prepared by using thiourea contains which ion in the solution, mainly responsible for a characteristic test?
- 1) NaCN 2) Na_2S 3) Na_2SO_4 4) NaCNS
- 10) In steam distillation, the V.P of the volatile organic compound is –
- 1) equal to atmospheric pressure 2) less than atmospheric pressure
3) more than atmospheric pressure 4) none of these

- 11) The 0.20 g of hydrocarbon on combustion gave 0.66 g of CO_2 . The % of hydrogen in the hydrocarbon is about
 1) 45 2) 10 3) 33 4) 90
- 12) An organic compound is fused with fusion mixture and extracted with HNO_3 . The extract gives yellow precipitate with ammonium molybdate. It shows the presence of which element?
 1) Phosphorous 2) Arsenic 3) Both (1) and (2) 4) May be P or As or both
- 13) The 0.5 g of an organic compound containing nitrogen on Kjeldahlising required 29 ml of N/5 H_2SO_4 for complete neutralization of ammonia. The percentage of nitrogen in the compound is
 1) 34.3 2) 16.2 3) 21.6 4) 14.8
- 14) A compound contains 38.8% C, 16% H and 45.2% N. The formula of the compound would be
 1) CH_3NH_2 2) CH_3CN 3) $\text{C}_2\text{H}_5\text{CN}$ 4) $\text{CH}_2(\text{NH}_2)_2$
- 15) In the estimation of nitrogen by Duma's method 0.59 g of an organic compound gave 112 mL nitrogen at NTP. The percentage of nitrogen in the compound is :
 1) 23.7 2) 11.8 3) 20 4) 47.5
- 16) Polarization of electrons in acrolein may be written as
 1) $\text{C}^{\delta-}\text{H}_2 = \text{CH} - \text{C}^{\delta+}\text{H} = \text{O}$ 2) $\text{C}^{\delta-}\text{H}_2 = \text{CH} - \text{CH} = \text{O}^{\delta+}$
 3) $\text{C}^{\delta-}\text{H}_2 = \text{C}^{\delta+}\text{H} - \text{CH} = \text{O}$ 4) $\text{C}^{\delta+}\text{H}_2 = \text{CH} - \text{CH} = \text{O}^{\delta-}$
- 17) The heat of hydrogenation of 1-hexene is 126 kJ mol^{-1} , When a second double bond is introduced in the molecule, the heat of hydrogenation of the resulting compound is 230 kJ mol^{-1} . The resulting compound (diene) is
 1) 1, 3- Hexadiene 2) 1, 4- Hexadiene 3) 1, 5- Hexadiene 4) Nothing certain
- 18) When toluene reacts with methyl chloride in presence of anhydrous AlCl_3 it forms
 1) o and p-Xylenes 2) m - Xylene 3) diphenyl methane 4) 1, 3, 5 - Triethyl benzene
- 19) The $-\text{NO}_2$ group in nitrobenzene is
 1) o - directing 2) m - directing 3) p - directing 4) o and p- directing
- 20) An electrophile is a chemical species, which is deficient of
 1) electrons 2) protons 3) neutrons 4) photons
- 21) In electromeric effect, an electrophile causes complete transfer of
 1) sigma electrons 2) valence electrons 3) pi electrons 4) lone pair of electrons

32) The enolic form of butanone contains

	σ bonds	π bonds	L.P of electron
1.	12	1	2
2.	11	1	2
3.	12	1	1
4.	10	2	2

33) The most stable free radical among the following is

- 1) $C_6H_5CH_2CH_2$ 2) $C_6H_5CHCH_3$ 3) CH_3CH_2 4) CH_3CHCH_3

34) Which of the following behaves both as a nucleophile and as an electrophile?

- 1) $CH_3C\equiv N$ 2) CH_3OH 3) $CH_2=CHCH_3$ 4) CH_3NH_2

35) The correct nucleophilicity order is

- 1) $CH_3^- < NH_2^- < OH^- < F^-$ 2) $CH_3^- \simeq NH_2^- > OH^- \simeq F^-$
3) $CH_3^- > NH_2^- > OH^- > F^-$ 4) $NH_2^- > F^- > OH^- > CH_3^-$

36) What is the decreasing order of strength of the bases OH^- , NH_2^- , $HC\equiv C^-$ and $CH_3CH_2^-$

- 1) $CH_3CH_2^- > NH_2^- > HC\equiv C^- > OH^-$
2) $HC\equiv C^- > CH_3CH_2^- > NH_2^- > OH^-$
3) $OH^- > NH_2^- > HC\equiv C^- > CH_3CH_2^-$
4) $NH_2^- > HC\equiv C^- > OH^- > CH_3CH_2^-$

37) Point out the incorrect statement about resonance?

- 1) resonance structures should have equal energy
2) In resonating structures, there should not be same number of electron pairs?
3) In resonate structures, there should not be same number of electron pairs?
4) Resonating structure should differ only in the location of electrons around the constituent atoms.

38) In which of the following resonance will be possible?

- 1) $CH_2-CH_2-CH_2-CHO$ 2) $CH_2=CH-CH=O$
3) CH_3COCH_3 4) $CH_2=CH-CH_2-CH=CH_2$

39) The heat of hydrogenation of 1-hexene is 126 kJ mol^{-1} , When a second double bond is introduced in the molecule, the heat of hydrogenation of the resulting compound is 230 kJ mol^{-1} . The resulting compound (diene) is

- 1) 1, 3-hexadiene 2) 1, 4-hexadiene 3) 1, 5-hexadiene 4) nothing certain

- 48) Sodium nitroprusside when added to an alkaline solution of sulphide ions produces a colouration
- 1) red 2) blue 3) brown 4) purple
- 49) All carbon atoms are sp^2 -hybridised in :
- 1) $HC\equiv C - C\equiv CH$ 2) $H_2C=C=CH_2$ 3) 2-butene 4) 1,3-butadiene
- 50) Sodium extract is heated with conc. HNO_3 before testing for halogens because
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