

CHM 112 PRACTICE QUESTIONS

- 1) The common feature of organic chemicals is that they contain----- (a)fluorine (b)**carbon** (c)lithium (d)vinyl group
- 2) The ability of atoms to join together is termed----- (a)**catenation** (b)cracking (c)hydrogenation (d)catalysis
- 3) Organic chemicals were thought to be found in only----- (a)non-living things (b)semi-living things (c)**living things** (d)none of the above
- 4) Inorganic chemicals were thought to be found in----- (a)living things (b)**non-livingthings** (c)all of the above (d)none of the above
- 5) Ethanoic acid is used in----- (a)sugar (b)petrol (c)clothing (d)**vinegar**
- 6) Which of the following substance is contained in alcoholic drinks? (a)Ethanoic acid (b)glycine (c)**ethanol** (d)glucose
- 7) Which of the following is not a property of homologous series? (a)they have the same functional group (b)**they have similar physical properties** (c)they have similar chemical properties (d)they have the same general formula
- 8) Organic compounds are mainly----- (a)electrovalent (b)**covalent** (c)dative (d)ionic
- 9) One of the following compounds is an exception to Baeyer's strain theory (a)**benzene** (b)methane (c)ethane (d)ethanol
- 10) "Rings that have bond angles different to the tetrahedral angle will suffer from strain, if the strain is too great the ring may break" who said this statement? (a)Friedrich Wohler (b)**A.Baeyer** (c)A.Kekule (d)Heisenberg
- 11) Organic compounds with the same molecular formula and functional group but a different arrangement of the atoms in space are called----- (a)geometric isomers (b)functional group isomers (c)metamers (d)**chain isomers**
- 12) Isomerism which occurs owing to the lack of free rotation about double bonds is----- (a)functional (b)chain (c)stereo (d)**geometric**
- 13)----- seek out centres of positive charge (a)**nucleophiles** (b)electrophiles

- (c)none of the above (d)A or B
- 14)----- seek out centres of negative charge (a)nucleophiles (b)**electrophiles**
(c)A or B (d) none of the above
- 15) What is the functional group in nitriles? (a)triple bond (b)double bond (c)OH group (d)**cyanide group**
- 16)What is the functional group in ketones? (a)cyanide group (b)triple bond (c)**CO group** (d)oxygen
- 17)What is the functional group in amides? (a)**CONH₂ group** (b)NH₂group (c)CO group (d)OH group
- 18)A × B----- A⁺ + B⁻ This reaction is bond breaking through----- (a)homolysis (b)catalysis (c)**heterolysis** (d)none of the above
- 19)What is the functional group in Arene? (a)NH₂ group (b)**Benzene ring** (c)CO group (d)OH group
- 20)What is the name of this molecule CH₃CHNH₂CH₂OH? (a)1-aminopropan-1-ol (b)2-aminopropan-3-ol (c)**2-aminopropan-1-ol** (d)none of the above
- 21)Which of the following is an electrophile? (a)OH⁻ (b)H₂O (c)all of the above (d)**none of the above**
- 22)Which of the following is known as 'marsh gas'? (a)ethane (b)ethene (c)methanol (d)**methane**
- 23)The correct combustion equation for pentane is----- (a)C₅H₁₀ + 8O₂-----
5CO₂ + 7H₂O (b)C₆H₁₀ + 8O₂----- 2CO₂ + 4H₂O (c)**C₅H₁₂ + 8O₂----- 5CO₂ + 6H₂O**
(d)none of the above
- 24)What is the melting point of butane? (a)**-138°C** (b)138°C (c)-182°C (d)182°C
- 25)In the substitution reaction of methane, at the propagation stage, the equation is
----- (a)Cl₂----- 2Cl[·] (b)**CH₄ + Cl[·]----- CH₃[·] + HCl** (c)CH₃[·] + Cl[·]----- CH₃Cl (d)no answer

- 26) Decarboxylation of a salt of an organic acid by heating with soda lime yields
(a) **alkane** (b) alkene (c) alkyne (d) alkanic acid
- 27) RM_gX is the general formulae for a Grignard reagent, what does R and X represent? (a) metal and halogen (b) alkoxy and metal (c) alkoxy and halogen
(d) **alkyl and halogen** (e) none of the above
- 28) Which of the following is an example of free radical reaction? (a) **substitution reaction** (b) elimination reaction (c) esterification (d) polymerisation
- 29) What is the boiling point of but-1-ene? (a) -18°C (b) -10°C (c) **-6°C** (d) -8°C
- 30) If you heat alcohol with concentrated sulphuric acid you get----- (a) alkane
(b) **alkene** (c) alkyne (d) alkanol
- 31) Bromine is-----colour and changes to-----when added to an alkene
(a) **red-brown, colourless** (b) orange, yellow (c) colourless, orange (d) purple, colourless
- 32) Alkenes undergo----- (a) condensation polymerisation (b) **addition polymerisation** (c) ionic polymerisation (d) atactic polymerisation
- 33) What is the monomer unit of Teflon? (a) vinyl chloride (b) styrene (c) ethene
(d) **tetrafluoroethene**
- 34) Ethyne will polymerize at----- to give----- (a) 38°C , polyethyne (b) 400°C , styrene (c) **400°C , benzene** (d) 48°C , polyethyne (e) 480°C , benzene
- 35) Which of the following is an activating group in electrophilic substitution? (a) NO_2
(b) COOH (c) CHO (d) SO_3H (e) **none of the above**
- 36) Which of the following is a deactivating group? (a) NH_2 (b) **COOH** (c) CH_3 (d) OCH_3
(e) none of the above
- 37) The methyl group directs where? (a) ortho (b) meta (c) ortho meta (d) **ortho para**
- 38) Wurtz's synthesis is used to produce----- (a) alkenes (b) alkynes (c) alkanic acids (d) **alkanes** (e) alkanols
- 39) Benzene + Cl_2 ___? ___ benzoyl chloride + HCl. What is missing? (a) Cl_2 (b) Ni

(c)**AlCl₃**(d)H₂

- 40)----- are a type of cyclic ethers (a)**epoxides** (b)cyclo ethers (c)epoxanes (d)amines
- 41)Epoxides are also known as----- (a)alkanes (b)**oxiranes** (c)ethers (d)none of the above
- 42)Benzene__H₂,Ni____ ? (a)benzane (b)hexane (c)**cyclohexane** (d)heptane
- 43)Glycol is an old name for----- (a)ethene-1,2-diol (b)**ethane-1,2-diol** (c)ethane-1,2ol (d)hexanol
- 44)Glycerol is an old name for----- (a)ethane-1,2-diol (b)hexanol (c)hex-2-ol (d)**propan-1,2,3-triol** (e)none of the above
- 45)----- is the traditional way of making alcohol (a)Grignard reagent (b)hydration of alkenes (c)**fermentation** (d)none of the above
- 46)Vodka, brandy and whisky are----- drinks (a)carbonated (b)**alcoholic** (c)sweetened (d)catenated
- 47)----- are reduced to secondary alcohols (a)aldehydes (b)alkanoic acids (c)alkanols (d)**ketones**
- 48)Ethanal_____ propan-2-ol. What is the Grignard reagent and element necessary for conversion? (a)C₂H₅MgBr, H₂O (b)C₃H₇MgBr, H₂O (c)**CH₃MgBr, H₂O** (d)C₄H₉MgBr, H₂
- 49)2-methylpropan-2-ol is an example of (a)primary alcohol (b)secondary alcohol (c)**tertiary alcohol** (d)all of the above
- 50)Tertiary alcohols are oxidised to----- (a)aldehydes (b)ketones (c)alkanoic acids (d)**none of the above**
- 51)Polymerisation of ethanol yields----- (a)polyethanol (b)Teflon (c)**Bakelite** (d)polyacrylonitrile
- 52)-----has a characteristic smell which may be detected near rotting fruit (a)ethene (b)ethyne (c)**ethanal** (d)ethanol

- 53) The wacker process is used to produce----- (a)**ethanal** (b)ethanol (c)ethanone
(d)Ethanoic acid
- 54) The structural formula for benzaldehyde is----- (a) C_6H_6Cl (b) C_6H_5OH (c) C_6H_5Ph
(d) **C_6H_5CHO**
- 55)----- is mainly manufactured from cumene (a)ethanal (b)propanal
(c)**propanone** (d)propene (e)none of the above
- 56) What is the structural formula for cumene? (a) **$C_6H_5CH(CH_3)_2$** (b) C_2H_5OH
(c) $C_6H_5ClCH(OH)_2$ (d) C_6H_5CHO
- 57)----- is a reagent used in identifying aldehydes and ketones (a) $KMnO_4$
(b)Bromine water (c) $K_2Cr_2O_7$ (d)**2,4-dinitrophenylhydrazine**
- 58) The aldol condensation is a reaction that-----undergo (a)alkanones
(b)**aldehydes** (c)alkanols (d)alkanoates
- 59) What will be made if butanone is reduced using $LiAlH_4$? (a)butanal (b)but-2-ene
(c)**butan-2-ol** (d)butan-2-oic acid
- 60) Which of the following is a test for alkanals? (a)silver mirror test (b)iodoform
test (c)orange precipitate with fehling's solution (d)**all of the above**
- 61)----- is responsible for the acidity of carboxylic acids (a)presence of double
bond (b)**presence of COOH group** (c)number of hydrogen (d)none of the above
- 62) $C_6H_5CH_2COOH$ is named----- (a)phenylethanoic acid (b)benzoic amine
(c)benzenamide (d)phenylpropanoic acid
- 63) In ----- german chemist took ammonium cyanate and heated it. The product
was ----- (a)1826, ammonia (b)1829, urea (c)1828, ammonia (d)**1828, urea**
(e)1827, cyanide
- 64) Nitrile synthesis is used to produce ----- (a)alkanals (b)alkanones
(c)**carboxylic acids** (d)esters
- 65) $LiAlH_4$ is called----- (a)lithiumaluminiumtetrahydrido(iii)
(b)aluminiumlithiumtetrahydroaluminate(iii)
(c)lithiumtetrahydroaluminate(iii) (d)**lithiumtetrahydridoaluminate(iii)**

- 66) Which of the following is a carboxylic derivative? (a) ethanol (b) **acid chlorides** (c) alkanes (d) benzaldehyde
- 67) $\text{CH}_3\text{CONH}_2 + \text{OBr}^- + 2\text{OH}^- \longrightarrow \text{CH}_3\text{NH}_2 + \text{CO}_3^{2-} + \text{H}_2\text{O} + \text{Br}^-$ This reaction is called (a) **Hofmann degradation** (b) Hoffmann degradation (c) Hoffmann oxidation (d) all of the above
- 68) Urea is a/an ----- (a) amine (b) nitrile (c) **amide** (d) carboxyl
- 69) ----- are responsible for the odour of foodstuffs (a) **esters** (b) amides (c) amines (d) ethers
- 70) Aspirin, one of the most remarkable successes of the pharmaceutical industry is ----- (a) an ether (b) **an ester** (c) an epoxide (d) an amine
- 71) Williamson's synthesis is used to produce ----- (a) amines (b) alkanols (c) **ethers** (d) esters
- 72) A ----- Physicist discovered that some substances have the ability to rotate the plane of polarised light. (a) German (b) Russian (c) **French** (d) Swedish
- 73) ----- in ----- discovered that some substances have the ability to rotate the plane of polarised light (a) Friedrich Wohler, 1812 (b) A. Baeyer, 1813 (c) Jean Biot, 1813 (d) **Jean Biot, 1812** (e) A. Baeyer, 1811
- 74) Rotation of the plane of polarised light is measured with a ----- (a) galvanometer (b) **polarimeter** (c) Wheatstone bridge (d) spectrophotometer
- 75) A racemic mixture consists of ----- (a) **equal proportion of two enantiomers** (b) unequal proportion of two enantiomers (c) equal proportion of two diastereoisomers (d) unequal proportion of two diastereoisomers
- 76) ----- is the separation of enantiomers or diastereoisomers (a) configuration (b) rotation (c) **resolution** (d) divorce (e) segregation
- 77) What is the formula for measuring specific rotation at 20°C? (a) $[\alpha]_D^{40} = \text{length of tube (dm)} / \text{measured rotation}$ (b) $[\alpha]_D^{20} = \text{length of tube (dm)} / \text{measured rotation} \times \text{concentration (g cm}^{-1}\text{)}$ (c) **$[\alpha]_D^{20} = \text{measured rotation} / \text{length of tube (dm)} \times \text{concentration (g cm}^{-1}\text{)}$** (d) $[\alpha]_D^{40} = \text{measured rotation} / \text{length of tube (dm)}$

- 78) When a polaroid is rotated to the right (clockwise direction), we say the chemical in the tube is----- (a) laevorotatory (b) **dextrorotatory** (c) all of the above (d) none of the above
- 79)----- was one of the first scientists to make a study of optical activity (a) Jean Biot (b) Mendel eev (c) Heisenberg (d) **Louis Pasteur**
- 80) In ----- a scientist made a crucial observation when he was working on the salts of tartaric acid (a) 1844 (b) 1846 (c) **1848** (d) 1850
- 81) The modern name for tartaric acid is----- (a) 1,2-dihydroxypentanedioic acid (b) **2,3-dihydroxybutanedioic acid** (c) 1,2-dihydroxybutanedioic acid (d) 1,2,3-trihydroxyhexanedioic acid
- 82)----- are mirror images of one another (a) enantiomers (b) optical isomers (c) **all of the above** (d) none of the above
- 83) The modern name for lactic acid is ----- (a) 5-hydroxypropanoic acid (b) 1-hydroxybutanoic acid (c) 2-hydroxybutanoic acid (d) **2-hydroxypropanoic acid**
- 84) The carbon atom at the centre of 4 different groups is called----- (a) symmetric carbon (b) **asymmetric carbon** (c) master carbon (d) holding carbon
- 85) $\text{H}_2\text{N}-\text{CH}_2-\text{COOH}$ is called ----- (a) glycerol (b) **glycine** (c) cumene (d) adepic acid
- 86) The Cahn, Ingold and Prelog naming system was invented in----- (a) **1956** (b) 1960 (c) 1964 (d) 1962
- 87) In Cahn, Ingold and Prelog system, R stands for----- (a) rectes (b) rectis (c) **rectus** (d) rector
- 88) The spontaneous change of a solution of α -glucose into β -glucose is termed----- (a) spontaneity of glucose (b) **mutarotation of glucose** (c) resolution of glucose (d) racemicity of glucose
- 89) Trimethyl amine is a----- amine (a) primary (b) secondary (c) **tertiary** (d) none of the above
- 90) Cocaine is----- (a) an amide (b) **an amine** (c) a nitrile (d) a carboxylic acid

derivative

- 91) Nitrous acid test is used to test----- (a) **amines** (b) amides (c) nitriles
(d) carbonyl
- 92) Glucose is a ----- sugar (a) **reducing** (b) oxidizing (c) reducing-oxidizing (d) none
of the above
- 93) Monosaccharides have the general formula (a) $C_nH_{2n+2}O_n$ (b) $C_{n+2}H_{2n}O_n$
(c) **$C_nH_{2n}O_n$** (d) $C_nH_{2n}O_{n-1}$
- 94) Teflon is the polymer obtained from----- (a) vinyl chloride (b) **tetrafluoroethene**
(c) acrylonitrile (d) ethene
- 95) Naphthalene is----- (a) an alkene (b) an alkenol (c) **an arene** (d) none of the
above
- 96) Benzene readily undergoes----- reaction (a) addition (b) **substitution**
(c) condensation (d) none of the above
- 97) What is the name of the scientist that named benzene? (a) Louis Pasteur (b) Jean
Biot (c) **August Kekulé** (d) Huckel
- 98) Esters are also known as----- (a) aldehydes (b) alkanols (c) **alkanoates**
(d) epoxides
- 99) Proteins are made up of----- (a) amides (b) alkenes (c) **amino acids** (d) alcohol