MULTIPLE CHOICE QUESTIONS

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1. Which one of the following is equal to the pK_a of a weak acid?

A) Its relative molecular mass
B) The pH of a solution containing equal amounts of the acid and its conjugate base
C) The equilibrium concentration of its conjugate base
D) The pK_b of its conjugate base

2. 3-bromocyclohexene is formed by bromination of cyclohexene with

A) Br_2 with CCl_4

B) N-Bromo Sucinimide

C) Br_2 with benzene

D) HBr

3. When Propene react with HBr gives---------- major product

A) 1-Bromopropane

B) 2-Bromopropane

C) 1-Bromopropene

D) 1,2-Bromopropene

4. When Propene reacts with HBr and peroxide gives---------- major product

A) 1-Bromopropane

B) 2-Bromopropane

C) 1-Bromopropene

D) 1,2-Bromopropene

5. What reactive intermediate is formed when diazomethane is heated?

A) Carbanion
B) Carbene
C) Carbocation
D) Carbon radical

6. The products of the benzaldehyde and NaOH reaction is
A) Benzyl alcohol
B) Benzyl amine
C) Benzyl ether
D) Benzyl phenol

7. Which of the following will not undergo an aldol condensation reaction?

A) Butanal
B) 2-methyl butanal
C) 2,2-dimethyl butanal
D) None

8. Iron does not perform the function of?
A) Oxygen transport
B) Immune function
C) Brain function
D) Gene regulation

9. _____will produce a five membered ring via a Dickemann cyclization
A) 1,6-diester
B) 1,6-diketone
C) 1,7-diester
D) a & c

10. How long is a triple bond in butyne?
A) 1.20 Å
B) 1.34 Å
C) 1,54 Å
D) 1.397 Å

11. Benzophenone does not undergo aldol self-condensation because it has
A) no α-carbon
B) no α-hydrogen
C) α-hydrogen
D) none

12. The reaction rates of organic compounds are often
A) Slow
B) Fast
C) Normal
D) Depends on organic compounds

13. Na/liq. NH_3 aid in partial reduction of alkyne to
A) Cis alkene
B) trans alkene
C) both products
D) None

14. Simple alkanes (saturated hydrocarbons) are
A) Straight chain hydrocarbon
B) Branch chain hydrocarbon
C) No chain hydrocarbon
D) None of these

15. The ester analogue of the aldol condensation is
A) Claisen condensation
B) Cannizaro's condensation
C) Both a and b
D) None

16. Which product is obtained when benzoic acid is reacted with $LiAlH_4$
A) Benzaldehyde
B) Toluene
C) Benzene
D) Benzyl alcohol

17. Lead tetra acetate (LTA) commonly used for oxidative cleavage of
A) 1,2 diol
B) 1,2 diketones
C) 1,1diole
D) 1,1 dione

18. A mixture of low boiling hydrocarbons is called
A) Coal
B) Petroleum
C) Natural gas
D) Liquid petroleum gas

19. Oxidation states of formaldehyde is

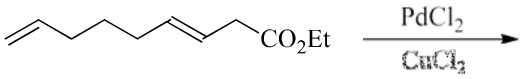
A) 0

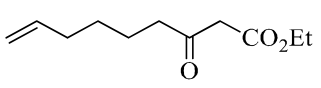
B) +1

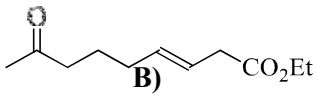
C) -1

D) +2

20. The oxidation of following compound will yield



A) 



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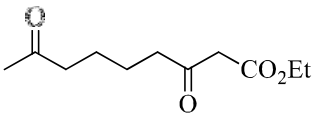
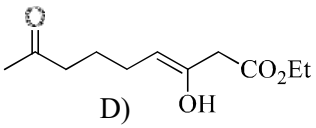
C) 



D)

21. Commercial sources of alkanes include

A) Coal

B) Petroleum

C) Natural gas

D) All the above

22. Which one of the following is Swern oxidizing reagent?

A) DMSO, H_3PO_4
B) DMSO, $COCl_2$
C) DMSO, O_2
D) DMSO, $(CF_3CO)_2O$

23. Nef oxidation is used to oxidize

A) Primary & Sec. Nitro compounds
B) Ter. alcohols
C) Cleavage of tertiary alcohols
D) Terminal alkenes

24. Which one of the following is not oxidizing agent?

A) Dioxygen
B) Bromine solution
C) Potassium manganate
D) Potassium iodide

25. Hydrogen acts as a reducing agent and thus resembles
A) Halogen
B) Noble gases
C) radioactive elements
D) alkali metals

26. When potassium dichromate, $K_2Cr_2O_7$ is converted into K_2CrO_4, the change in oxidation number of chromium is:

A) 0
B) 6
C) 4
D) 3

27. Oxidation involves

A) loss of hydrogen
B) loss of oxygen
C) gain in hydrogen
D) gain in electrons

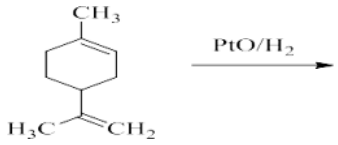
28. Reduction with Potassium Iodide (KI)

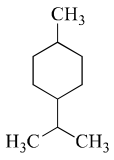
A) iodide ion is oxidized to iodine
B) iodide ion is reduced to iodine
C) iodine is reduced to iodide ion
D) iodine is oxidized to iodide ion

29. Which of the following is used as a solvent for fats, oils, paints, and varnishes?

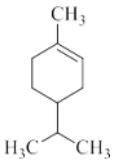
A) ethylene
B) acetylene
C) phenol
D) methanol

30. Which one is product of following reduction?





A.



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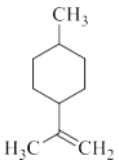


C)

D) a & b

31. Specify the Lindlar's catalyst

A) $Pd/CaCO_3$/Quinone
B) $Pd/CaCO_3$/Quinoline
C) Pb/Ca_3CO_2/Quinone
D) Pd/Ca_3CO_2/Quinoline

32. Considering alkyl radicals, what is the term used for the group obtained by removing terminal hydrogen atom?

A) Iso-propyl

B) n-propyl

C) neo-propyl

D) propyl

33. Commonly used reducing agents for carbonyls are

A) $NaBH_4$
B) $LiAlH_4$
C) a & b
D) none

34. Which catalyst is used to produce cis-alkenes?

A) Pt
B) Lindlar's catalyst
C) Pd
D) Ni

35. Number of α-Hydrogen in formaldehyde

A) 2
B) 1
C) 0
D) 3

36. Which one is Rosemund reducing agent?

A. $Pb/CaCO_3$/Quinone
B. $Pd/BaSO_4$
C. $Pb/CaCO_3$/Quinoline
D. Pb/Ca_2CO/Quinoline

37. Rusting of iron is an example of

A) reduction
B) hydrogenation
C) oxidation
D) sublimation

38. Process in which substance gains electrons is called

A) oxidation
B) hydrogenation
C) sublimation
D) reduction

39. Raney nickel is finally divided form of nickel is made from

A) Nick lead alloy
B) Nick copper alloy
C) Nick aluminum alloy
D) None

40. $(Ph_3P)_3RhCl$ is

A) Lindlar's catalyst
B) Wilkinsons's catalyst
C) Adam's catalyst
D) Crabtree's catalyst

41. Selective oxidation of ketones in the presence of aldehydes can be carried out by

A) Birch reductions
B) Luche reduction
C) Raney nickl
D) All above

42. ----------not give Hoffman rearrangement reaction.

A) Un substituted amide
B) Substituted amide
C) N-bromo amide
D) Primary amide

43. Beckman rearrangement yields

A) Unsubstituted amide
B) Substituted amide
C) N-bromo sucinimde
D) Primary amide

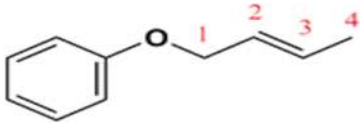
44. Vitamin E is lipid ---------- antioxidant

A) Soluble
B) insoluble
C) Miscible
D) Binding

45. Nylon is a copolymer of:

A) Urea and Formaldehyde
B) Phenol and Formaldehyde
C) Hexamethylenediamine and adipic acid
D) Vinyl Chloride and Vinyl alcohol

46. Which side-chain carbon makes a new bond to the benzene ring upon Claisenrearrangement of the following allylic phenyl ether?



A) C1
B) C2
C) C3
D) C4

47. Among the following, which is least acidic?
A) Phenol
B) O-cresol
C) p-nitrophenol
D) p-chlorophenol

48. Benzyl chloride is reacted with different nucleophiles (HO^-, CH_3COO^-, PhO^-, CH_3O^-).Arrange them in the decreasing order of reactivity with Benzyl chloride.
A) $H_3O^- > HO^- > PhO^- > CH_3COO^-$
B) $HO^- > CH_3O^- > PhO^- > CH_3COO^-$
C) $HO^- > PhO^- > CH_3O^- > CH_3COO^-$
D) $CH_3COO^- > CH_3O^- > HO^- > PhO^-$

49. Which version of the radical halogenation of an alkane is MOST selective?

A) Fluorination
B) Chlorination
C) Bromination
D) Iodination

50. Which one is the correct order of reactivity of different types of alcohol towards hydrogenhalide?
A) 1° alcohol > 2° alcohol > 3° alcohol
B) 2° alcohol > 1° alcohol > 3° alcohol
C) 3° alcohol > 1° alcohol > 2° alcohol
D) 3° alcohol > 2° alcohol > 1° alcohol

51. Liquefied petroleum gas is mainly composed of _____
A) Methane and ethane
B) Ethane and propane
C) Propane and butane
D) Butane and hexane

52. What is the correct order of nucleophilicity in the following options?
A) $(CH_3)_3CO^- > CH_3^-$
B) $CH_3S^- > CH_3SH$
C) $CH_3CH_2CH_2O^- < (CH_3)_3CO^-$
D) $(CH_3CH_2)_3N > (CH_3CH_2)_3$

53. Almost 95% of compounds are of carbon because they can form

A) Single bonds
B) Double bonds
C) Triple bonds
D) Multiple bonds

54. Hydrogen is good reducing agent which acts by
A) Taking oxygen
B) Giving electron
C) Both A and B
D) None

55. What is the difference in the structure between Pyrrolidine and Piperidine alkaloids?

A) Pyrrolidine is 5 membered, piperidine is 6-membere
B) Pyrrolidine is 6 membered, piperidine is 5-membere
C) Both are Five member with Nitrogen
D) Pyrrolidine is saturated, piperidine is unsaturated

56. The dehydration of primary alcohols is an example of __

A) Bimolecular elimination/E2 reaction
B) S_N2 reaction
C) S_N1 reaction
D) Unimolecular elimination/E1 reaction

57. Which of the following is not true for S_N1 reactions?

A) They occur through a single step concerted reaction
B) They are favored by polar solvents
C) Tertiary alkyl halides generally react through this mechanism
D) Concentration of nucleophile does not affect the rate of such reactions

58. Which of the following organic compound with molecular formula C_3HC_{12} exhibits only one signal in the IH NMR spectrum?

A) 2, 2-dichloropropane
B) 1, 2-dichloropropane
C) 1, 3-dichloropropane
D) 1, 1-dichloropropane

59. The order of decreasing stability of the following cations is?

(I) $CH_3C^+HCH_3$ (II) $CH_3C^+HOCH_3$ (III) $CH_3C^+HCOCH_3$

A) III > II > I
B) I > II > III
C) II > I > III
D) I > III > II

60. Which of the following is not true about nucleophile?

A) donates an electron pair to an electrophile to form a chemical bond
B) all molecules or ions with a free pair of electrons or at least one pi bond can act as nucleophiles
C) nucleophiles are Lewis acids by definition
D) a nucleophile becomes attracted to a full or partial positive charge

61. Aniline reacts with acetaldehyde to form which of the following?

A) Schiff's base
B) Carbylamine
C) Immine
D) Diazonium salt

62. Which of the following statements is correct for alkyl halide?

A) Alkyl halide will always show S_N1 mechanism
B) As branching at carbon increases, E1 mechanism is favoured as compared to S_N1 mechanism
C) In unimolecular reaction, increasing the temperature do not favours E1 mechanism
D) In most unimolecular reactions of alkyl halide E1 reaction is favoured over S_N1 reaction

63. Which of the following is the most activating in electrophilic aromatic substitution?

A) $-NO_2$

B) -$NHCOCH_3$
C) -CN
D) -NH_2

64. In NMR spectrum the distance between the centers of the peaks of doublet is called as?
A) Coupling constant
B) Spin constant
C) Spin-spin coupling
D) Chemical shift

65. Pyridine undergoes nucleophilic substitution with phenyl lithium at 100°C to give which ofthe following?
A) 3-phenylpyridine
B) 2-phenylpyridine
C) 3,5-diphenylpyridine
D) 2,5-diaphenylpyridine

66. Which one of the following compounds would react with C2H5MgBr to make 3-pentanol?
A) ethanal
B) ethyl formate
C) acetic acid
D) Acetone

67. Which of the following is not an example of a concerted reaction?
A) Diels-Alder
B) E2
C) S_N1
D) S_N2

68. The suffix in alkane represents
A) hydrogen atoms
B) carbon atoms
C) bonds present
D) class of compound

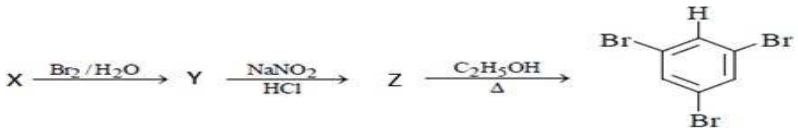
69. Carbonyl compounds especially ketones undergo reduction to form _____
A) Primary alcohols
B) Secondary alcohols
C) Alkanes
D) Alkenes

70. Which types of isomers are formed in rearrangement reactions?

A) structural isomers
B) Geometrical isomers
C) Optical isomer
D) Conformational isomers

71. When is ethanol mixed with ammonia and passed over alumina the compound formed iswhich compound?
A) C_2H_4
B) $C_2H_5NH_2$
C) $C_2H_5OC_2H_5$
D) CH_3OCH_3

72. In the following reaction sequence, what will be X?



A) Salicylic acid
B) Phenol
C) Aniline
D) Benzoic acid

73. The reaction of carboxylic acids with alcohols catalysed by conc. H_2SO_4 is called
A) Dehydration
B) Saponification
C) Esterification
D) Neutralization

74. Stable free radical should have ----------
A) Cation
B) Anion
C) Conjugated π-electron system
D) Triple bond

75. Select correct statement(s)

A) All resonating structure must have same number of electron pair
B) all resonating structure should have different relative position of atoms
C) All contributing structures contribute equally to real structure
D) structure with more charge separation is more stable

76. Which statement is correct about the inductive effect?

A) It operates through σ-bonds.
B) Its range is limited to one bond.
C) It operates through π-bonds.
D) It operates through space.

77. Among the following compounds, the most basic is

A) Ammonia
B) methyl amine
C) dimethyl amine
D) nitro amine

78. Hoffmann rearmament is most common reaction of----------

A) N-Haloamide
B) N-hydroxy amine
C) N-methyl benzamids
D) N-sulpho Amide

79. Which of the following acids is expected to have the smallest pKa value?

A) CH_2ClCO_2H
B) CH_3CO_2H
C) CF_3CO_2H
D) CCl_3CO_2H

80. Rearrangement which is initiated with formation of anion is

A) Hydrogen peroxide rearrangement
B) Benzil/benzylic acid rearrangement
C) Favorskii rearrangement
D) Clasien rearrangement

81. Predict the product of the following reaction.

1-methylcyclohexene + HBr/H_2O_2 →

A) 1-bromo-1-methylcyclohexane
B) 1-bromo-2-methylcyclohexane
C) 1-hydroxy-1-methylcyclohexane
D) 1-hydroxy-2-methylcyclohexane

82. +I effect shown by group

A) COOH
B) CH_3
C) NO_2
D) $^{+}NR_3$

83. Nitro phenol is more acidic than phenol due to the-------- the nitro group

A) +I inductive effect of
B) **-I inductive effect**
C) +M effect
D) –M effect

84. Which of the following reactions are favoured by polar aprotic solvent?

A) S_N1 reactions
B) **S_N2 reactions**
C) Both S_N1 and S_N1 reactions
D) None of the mentioned

85. The product formed predominantly in the reaction of toluene with chlorine in the presence of $FeCl_3$ is

A) *m*-chlorotoluene
B) ***o*- and *p*-chlorotoluene**
C) Benzoyl chloride
D) Benzyl chloride

86. Which of the following alcohols would be oxidised to propan-2-one?

A) ethanol
B) **propan-2-ol**
C) 2-methylpropan-2-ol
D) Butan-1-ol

87. Dehydrohalogenation of 2-bromo-2-methyl pentane give major product----

A) 2-methyl 2-butene
B) **2-methyl-2-pantene**
C) 2-methyl-1-pantene
D) 2-methyl-1 butene

88. Ozonolysis of benzene produces

A) Glycol
B) **Glyoxal**
C) Vicinal diol
D) Both B & C

89. Which one of the following halides can be used in the Friedel-Crafts reaction?

A) **Isopropyl chloride**
B) Bromobenzene
C) Chlorobenzene
D) Chloroethene

90. Which statement is true about S_N2 mechanism?

A) The rate of reaction increases on increasing strength of the nucleophile
B) The reaction is faster in polar protic solvents
C) The rate of reaction increases as the leaving group ability increases
D) **All mentioned**

91. The reaction of carboxylic acids with $NaHCO_3$ produces_____which helps it todifferentiate it from phenols.

A) H_2O
B) CO
C) **CO_2**
D) NaCl

92. Which structure is that of isoprene?

A) $H_2C=CH-CH_2-CH=CH_2$
B) $CH_3-CH(CH_3)-CH=CH_2$
C) $CH_3-CH=CH-CH=CH_2$
D) **$H_2C=C(CH_3)-CH=CH_2$**

93. Successful purification scheme is evidenced by the
A) specific activity increases
B) specific activity decreases
C) number of proteins in the sample decreases
D) both (a) and (c)

94. Amino acid that is found in proteins.
A) adenosine
B) adenine
C) **alanine**
D) linoleic acid

95. Which alkaloid was isolated from opium as the first crude drug?

A) **Morphine**
B) Nicotine
C) Cocaine
D) Caffeine

96. The three types of alkaloids are:

A) True alkaloids, false alkaloids, and neutral alkaloids
B) Proto alkaloids, non-proto alkaloids, and pseudo alkaloids
C) True alkaloids, proto alkaloids, and pseudo alkaloids
D) Proto alkaloids, pseudo alkaloids and false alkaloids

97. The reaction of carboxylic acids with alcohols catalyzed by conc. H_2SO_4 is called
A) Dehydration
B) Saponification
C) **Esterification**
D) Neutralization

98. If a certain process has $\Delta S_{univ} > 0$ at 25°C, the process may be described as
A) exothermic.
B) endothermic.
C) **spontaneous.**
D) moving rapidly toward equilibrium.

99. What term is given to the fact that the entropy of a perfect crystalline solid is zero at absolute zero?
A) 1st law of thermodynamics
B) 2nd law of thermodynamics
C) **3rd law of thermodynamics**
D) crystalline lattice theory

100. The debris accompanying a mineral is called

A) slag.
B) **gangue.**
C) ore.
D) halite.

101. _____ is the decomposition of organic compounds into simpler compounds by the action of enzymes.
A) Hydrogenation
B) Fermentation
C) Combustion
D) Cracking

102. What is the name for spontaneous emission of particles or electromagnetic radiationby certain nuclei?
A) Protons
B) Isotopes
C) Radioactivity
D) Neutrons

103. What is Lassaigne's test extract called as?
A) Fusion extract
B) Sodium fusion extract
C) Lassaigne extract
D) Sodium extract

104. Which organic compound did Friedrich Wöhler prepare to disprove that only naturecould produce organic compounds?
A) Acetic acid
B) Ethanol
C) Urea
D) Methylamine

105. Which type of isomerism is described as two compounds having the same molecular formula but different bond connectivity?
A) Stereoisomers
B) Geometrical isomers
C) Constitutional isomers
D) Conformational isomers

106. The reaction of ethylene and water yields
A) an Aldehyde.
B) an ester.

C) an alcohol.

D) an ether.

107. Which is the mildest reducing agent which reduces only carbonyl group in presence of nitro, carboxyl, double bond and ester groups?

A) $LiAlH_4$
B) $NaBH_4$
C) $Na\text{-}NH_3$
D) $H_2\text{-}Ni$

108. A synthon can be

A) positively charged
B) negatively charged
C) neutral
D) both positively and negatively charged

109. Which of the following is the wavelength of microwave radiation region?

A) 10-780nm
B) 0.78-30nm
C) 0.6nm-10mm
D) **30cm-1mm**

110. The electron of Nitrogen participating in the resonance in pyridine is present in whichorbital?

A) s-orbital
B) p-orbital
C) sp-orbital
D) sp^2-orbital

111. What is the entropy of vaporization of H_2O at 100°C?
A) 40 kJ/mol
B) 40 J/K
C) **28 cal mol^{-1} K^{-1}**
D) 28 cal mol^{-1} K^{-1}

112. Which one of the following possess highest melting point?
A) Chlorobenzene
B) o-dichlorobenzene
C) m-dichlorobenzene
D) p-dichlorobenzene

113. Which is defined as the maximum amount of solute that will dissolve in a givenquantity of solvent at a specific temperature?
A) precipitation
B) combustion
C) solubility
D) super saturation

114. What is the source of UV radiation?

A) Hydrogen gas discharge lamp
B) RF oscillator
C) Klystron oscillator
D) Nernst Filament

115. Which transitions are studied by UV spectrometer?

A) Rotational
B) Electronic
C) Nuclear
D) Vibrational

116. For one mole of gas Cp and Cv relations are:

A) Cp = Cv
B) Cp = Cv – R
C) Cp = Cv + R
D) Cp = Cv·R

117. The process of adsorption of hydrogen on palladium ion is known as:
A) Syneresis
B) Occlusion
C) Diffusion
D) Erosion

118. Arenes do not undergo
A) Dehydrogenation
B) Coupling reaction
C) Halogenation
D) Cyclic additions

119. Which of the following are used as water repellents?
A) Carbides
B) Silicon
C) Silicones
D) Silicates

120. Average kinetic energy per molecule is:

A) (3/2)kT
B) (3/2)RT
C) (½)RT
D) nRT

121. The cell in which electrical energy is converted to chemical energy is:

A) Galvanic cell
B) Voltaic cell
C) Electrolytic cell
D) Electrochemical cell

122. In an auto catalytic reaction, the rate of reaction:

A) Increase with time
B) Not affected with time
C) Decrease with time
D) Can't be predicted

123. Two isotonic solutions will have same:

A) Vapour pressure
B) Boiling point
C) Freezing point
D) Osmotic pressure

124. The specific gravity of H_2SO_4 is:
A) 1.34
B) 1.14
C) **1.84**
D) 1.54

125. For the respiration of sea divers, the mixture is used:
A) He and O_2
B) Ar and O_2
C) Ne and O_2
D) Kr and O_2

126. In isoelectric focusing, proteins are separated on the basis of their
A) relative content of positively charged residue only
B) relative content of negatively charged residue only
C) size
D) relative content of positively and negatively charged residue

127. The process of decomposition of a salt by passing current.

A) Hydration
B) Hydrolysis
C) Electrolysis
D) Solvolysis

128. Which of the following polymers is a condensation polymer?
A) Polystyrene
B) Teflon®
C) Polyvinylchloride
D) Nylon 66

129. Which type of Quantum Transition takes place in Ultraviolet and Visible spectroscopy?

A) Rotation of molecules
B) Nuclear
C) Bonding electrons
D) Spin of nuclei in magnetic field

130. Heating of rubber with Sulphur is known as

A) Galvanization
B) Vulcanization
C) Bessemerization
D) Sulphonation

131. Which of the following sugar give a positive result with Seliwanoff test?

A) Sucrose

B) Glucose
C) Galactose
D) Mannose

132. Which of the following principles are used in silica analyzer?

A) Amperometry principle
B) Colorimetric principle
C) Coulometric principle
D) Magnetic principle

133. Which is the best-suited method for the separation of para and ortho-nitrophenols from 1:1 mixture?

A) crystallisation
B) chromatography
C) sublimation
D) steam distillation

134. The correct order of increasing nucleophilicity is

A) $Cl^- < Br^- < I^-$

B) $Br^- < Cl^- < I^-$

C) $I^- < Br^- < Cl^-$

D) $I^- < Cl^- < Br^-$

135. By passing current through electrolyte.

A) Atoms are produced in solution
B) Ions in the solution encounter each other
C) The solution is polarized
D) The molecule of solution move

136. If two solutions are mixed together in a container and the container "feels hot", then

A) the reaction is endothermic.
B) the reaction is exothermic.
C) the energy of the universe is increased.
D) the energy of both the system and the surroundings is decreased.

137. How many calories are in 854.3 J? (1 cal = 4.184J)

A) 4.897×10^{-3} cal
B) **204.2 cal**
C) 1.171×10^{-3} cal
D) 0.2390 cal

138. When heat is absorbed by the system and work is done by the system on the surroundings then

A) q is negative and w is positive.
B) both q and w are positive.
C) both q and w are negative.

D) **q is positive and w is negative**.

139. What is the concentration of H^+ in a 0.025 *M* HCl solution?
A) 0
B) 0.013 *M*
C) 0.025 *M*
D) 0.050 *M*

140. The transition state of a catalyzed reaction is lower in energy than that of the uncatalyzed reaction

A) because of enthalpic interactions between the enzyme and the transition state.
B) because of favorable interactions with the substrate.
C) because of a smaller delta S between the [ES] and [EX] complex.
D) both a and c are correct.

141. Macromolecule described as large molecules built up from small repeating units called as which of the following?
A) Polymer
B) Dimers
C) Monomers
D) Metamers

142. Which statement is *not* correct?

A) Aluminum has a low density versus other metals.
B) $Al(OH)_3$ is an amphoteric compound.
C) Metallic aluminum is toxic to humans.
D) Aluminum is very reactive with oxygen.

143. What is the molecular shape of AlF_3?
A) Tetrahedral
B) Linear
C) Square planar
D) Trigonal planar

144. The Downs cell is used in the production of
A) copper.
B) hydrogen.
C) magnesium.
D) sodium.

145. If a solute dissolve in an endothermic process
A) hydrogen bonds must exist between solvent and solute.
B) strong ion-dipole forces must exist in the solution.
C) the solute must be a gas.
D) the entropy of the solution must be greater than that of its pure components.

146. Products of molten NaCl salt electrolysis
A) Are not predictable
B) **Are predictable**
C) Sometimes predictable some time not

D) Are not obtained

147. Which among the following elements has the highest thermal conductivity?
A) Nitrogen
B) Oxygen
C) Hydrogen
D) Chlorine

148. NMR spectroscopy is used for determining structure in which of the following materials?

A) Radioactive materials
B) Insoluble chemical compounds
C) Liquids
D) Gases

149. In mass spectrometer, the ion currents are measured using which of the following?

A) Scintillation counter
B) Ion counter
C) Electrometer tube
D) Electric fields

150. The buffer capacity is equal to _____
A) $\Delta n / \Delta pH$
B) $pH / \Delta n$
C) ± 1pKa
D) ± 2pKa

151. What is the quantitative relationship between gas solubility and pressure?
A) Entropy
B) Henry's law
C) Enthalpy
D) Boyle's law

152. Which statement is *false*?
A) The vapor pressure of a solvent over a solution decreases as its mole fraction increases.
B) The solubility of sugar increases as the temperature increases.
C) The vapor pressure measure at its equilibrium.
D) The greater the pressure of a gas over a solution, the greater its solubility.

153. What are possible units for the reaction rate?
A) $L \cdot mol^{-1} \cdot s^{-1}$
B) $L^2 \cdot mol^{-2} \cdot s^{-1}$
C) s^{-1}
D) $mol \cdot L^{-1} \cdot s^{-1}$

154. Current flow due to the difference of electrical potential in a cell that is known as
A) Cell reaction
B) Cell capacity
C) Cell potential
D) None of the above

155. SHE has been arbitrarily taken.
A) 1
B) 2
C) Zero
D) Infinite

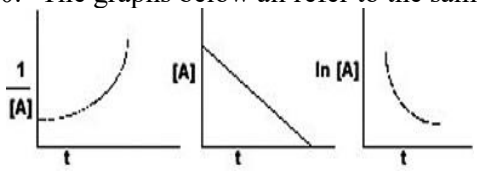
156. Zinc has standard electrode potential
A) 1
B) 0.25
C) 0
D) 0.76

157. Element that is at higher position in electrochemical series means?
A) **higher (+ ve) reduction potential**
B) lower (+ ve) reduction potential
C) higher (- ve) reduction potential
D) Both (a) and (b)

158. Sulfuryl chloride, $SO_2Cl_2(g)$, decomposes at high temperature to form $SO_2(g)$ and $Cl_2(g)$. The rate constant at a certain temperature is $4.68 \times 10^{-5}\ s^{-1}$. What is the order of the reaction?
A) Zero
B) First
C) Second
D) Third

159. Blast furnace is used for extraction of.
A) **Fe from its ore**
B) C from its ore
C) B from galena
D) S from bauxite

160. The graphs below all refer to the same reaction. What is the order of this reaction?



A) Zeroth
B) First
C) Second
D) Third

161. Which of the following sets of conditions could exist when two liquids which are completely miscible in one another are mixed?
A) $\Delta H_{soln} > 0$, entropy of system decreases
B) $\Delta H_{soln} \approx 0$, entropy of system decreases
C) $\Delta H_{soln} \approx 0$, entropy change of system ≈ 0
D) $\Delta H_{soln} \approx 0$, entropy of system increases

162. The Pelletized blast furnace slag is used for making?
A) paper

B) Glass
C) Cement
D) screens

163. What states that the solubility of a gas in a liquid is proportional to the pressure of the gasover the solution?
A) Entropy
B) Henry's law
C) Dissolution
D) Vapor pressure

164. Which of the following is *not* a colligative property?
A) Vapor pressure lowering
B) Atmospheric pressure
C) Boiling point elevation
D) Osmotic pressure

165. What is the name for a solute that does not exert a vapor pressure when it is dissolved in a liquid?
A) Colloid
B) **Nonvolatile**
C) Crystalline solid
D) All of above

166. What relationship states that the partial pressure of a solvent over a solution is given by the vapor pressure of the pure solvent times the mole fraction of the solvent in the solution?
A) Henry's law
B) Law of partial pressures
C) Curie's law
D) Raoult's law

167. Process of ammonia synthesis is known as
A) Ostwald process.
B) Birkland eyed process.
C) Haber process.
D) Contact process.

168. Fertilizer that is inorganic is

A) Urea
B) Ammonium nitrate
C) Manure
D) All above

169. How many moles of ammonia, NH_3, are in 13.81 g of NH_3?
A) 1.234 moles
B) 0.8107 moles
C) 8.316×10^{24} moles
D) 4.881×10^{23} moles

170. Balance the following equation: $B_2O_3(s) + HF(l) \rightarrow BF_3(g) + H_2O(l)$

A) **$B_2O_3(s) + 6HF(l) \rightarrow 2BF_3(g) + 3H_2O(l)$**
B) $B_2O_3(s) + H_6F_6\ (l) \rightarrow B_2F_6(g) + H_6O_3(l)$
C) $B_2O_3\ (s) + 2HF(l) \rightarrow 2BF_3(g) + H_2O(l)$
D) $B_2O_3\ (s) + 3HF(l) \rightarrow 2BF_3(g) + 3H_2O(l)$

171. Which is the thermodynamic condition for a spontaneous process at constant T and P?

A) ΔS > 0
B) ΔS < 0
C) ΔG < 0
D) ΔG > 0

172. The acidity generated by nitrogen fertilizers can be neutralized by
A) Gypsum
B) Lime
C) Milk of magnesia
D) Water

173. The pressure of sulfur dioxide in a container is 159 kPa. What is this pressure in atmospheres? (1 atm = 101,325 Pa = 760 torr)?
A) 0.209 atm
B) 0.637 atm
C) 1.57 atm
D) 21.2 atm

174. Which statement is correct?
A) If Q < K, then reactants must be converted to products.
B) If Q > K, then reactants must be converted to products.
C) If Q = K, then the system is at static equilibrium.
D) If Q < K, then more reactants are produced.

175. What is determined by the magnitude of intermolecular forces in a liquid and is a measure ofa fluid's resistance to flow?
A) Surface tension
B) Adhesion
C) Polarity
D) Viscosity

176. If a molecule at the surface of a liquid has enough kinetic energy to escape the liquid phaseand enter the gas phase, then which of the following terms is used to describe this phenomenon?
A) Boiling point
B) Condensation
C) Vaporization
D) Sublimation

177. Octane has a vapor pressure of 40. torr at 45.1°C and 400. torr at 104.0°C. What is its heat of vaporization? (R = 8.314 J/K • mol)
A) 39.1 kJ/mol
B) 46.0 kJ/mol
C) 590 kJ/mol
D) 710 kJ/mol

178. Which one of the following substances does not exist in the indicated solid type?
A) graphite–covalent crystals

B) Na–metallic crystals

C) SiO_2–molecular crystals

D) NaCl–ionic crystals

179. Which is the correct equation for the molar heat of sublimation?
A) $\Delta H_{sub} = \Delta H_{fus} - \Delta H_{vap}V_{liq}$

B) $\Delta U_{sub} = \Delta U_{fus} + \Delta U_{vap}$

C) $\Delta H_{sub} = \Delta H_{fus} - \Delta H_{vap}$

D) $\Delta H_{sub} = \Delta H_{fus} + \Delta H_{vap}$

180. Which statement is true about phase diagrams?
A) The slope of the liquid-solid phase boundary line is typically positive.

B) The slope of the liquid-solid phase boundary line is typically negative.

C) The triple point temperature is the lowest temperature where a liquid can exist.

D) All above.

181. What term is used to describe the relative arrangements of chiral carbon atoms within a polymer?
A) Chirality

B) Handiness

C) Tacticity

D) Substituents

182. ____is study about energy of a chemical system
A) Thermochemistry

B) Thermodynamics

C) chemical kinetics

D) stoichiometry

183. Hydrophilic interactions and hydrogen bonds are types of
A) Weak chemical bonds that hold together the atoms within a molecule

B) Strong chemical bonds that hold together the atoms within a molecule

C) **Weak chemical bonds that link together separate molecules**

D) Strong chemical bonds that link together separate molecules

184. Percentage of nitrogen in anhydrous ammonia is
A) 92

B) 82

C) 72

D) 62

185. Polar solvent has affinity to dissolve?
A) Gasoline (heptanes & octanes)

B) Methane

C) Argon

D) sodium chloride

186. Carrier proteins
A) Transport only one substance

B) Transport more than one substance

C) Exchange one substance to another

D) Perform all of these functions

187. A lipid bilayer permits freely the mobility of

A) Urea

B) Fructose

C) Glucose

D) Potassium

188. __is known as the powerhouse of the cell.

A) Nucleus

B) Cell membrane

C) Mitochondria

D) Lysosomes

189. Which one is not a phosphate fertilizer?

A) $(NH_4)_2S$

B) $Ca_3(PO_4)_2$

C) $(NH_4)_2\ HPO_4$

D) All of these

190. NaOH and HCl neutralization evolve heat

A) -40.4kj/mole

B) -50.5 kj/mole

C) -55.5 kj/mole

D) -57.9 kj/mole

191. Standard enthalpy of combustion of ethanol is

A) -100 kj/mole

B) -1250 kj/mole

C) **-1367 kj/mole**

D) -1500 kj/mole

192. Equilibrium can exist at the reaction completed

A) 50%

B) < 50%

C) 50%

D) **any of above**

193. Moles of a substance per litre is known as

A) Molar concentration

B) active weight

C) composition

D) concentration

194. Products and reactants are present in sufficient amount in reaction mixture when kc is

A) Neither very large nor very small

B) extremely small

C) extremely large

D) all above

195. Concentration is taken in

A) mol. cm^3

B) mol/liter

C) g equivalent liter

D) g. Lit-1

196. When both forward and backward reaction proceeds at equal rate it is

A) State of equilibrium

B) dynamic equilibrium

C) chemical equilibrium

D) static equilibrium

197. An example of_____equilibrium is when evaporation rate becomes equal to rate of condensation

A) Dynamic

B) chemical

C) static

D) physical

198. Which alkane is known as Marsh gas?

A) methane

B) ethane

C) propane

D) butane

199. The chemical formula of urea is_____

A) $(NH_4)_2CO_2$

B) $(NH_2)CO$

C) $(NH_4)_2CO_2$

D) $(NH_2)_2CO$

200. Incomplete combustion of a fuel gives a poisonous _____ gas.

A) Carbon dioxide

B) Iso cyanate

C) Carbon monoxide

D) Nitrogen

201. In K_2MnO_4, oxidation number of Mn is

A) +7

B) **+6**

C) +5

D) +4

202. Which statement is correct about standard hydrogen electrode?

A) 1.0M HCl solution is used

B) H_2 gas at 1 atm pressure is present

C) Platinum electrode is used

D) All of the above

203. Electrolysis is a process which utilizes

A) Chemical energy

B) Electrical energy

C) Heat energy

D) Biochemical energy

204. Standard hydrogen electrode has an arbitrarily fixed potential

A) 0.00 volt

B) 1.00 volt

C) 0.10 volt

D) 2.00 volts

205. The oxidation number of chromium in $K_2Cr_2O_7$ is

A) 14

B) 12

C) 6

D) 7

206. What is correct about electrolysis of molten NaCl

A) Oxidation takes place at cathode

B) Cl_2 gas is produced at anode

C) Reduction occurs at anode

D) H_2 gas is produced at cathode

207. Oxidation state of oxygen in OF_2 is

A) 0

B) +1

C) -2

D**) +2**

208. In superoxides, the oxygen has oxidation number

A) 0

B) +1

C) **-1/2**

D) -1

209. An electrochemical cell which produces electricity with a redox reaction is called a

A) Voltaic cell

B) Standard cell

C) Reversible cell

D) Electrolytic cell

210. A non-spontaneous redox reaction takes place as a result of electricity in

A) Voltaic cell

B) Denial cell

C) Dry cell

D) Electrolytic cell

211. Oxidation state of sulfur in SO_3^{2-}?

A) -4

B) -2

C) +2

D) **+4**

212. In lead storage batteries the cathode is made of

A) Pb

B) Pb coated with PbO_2

C) $PbSO_4$

D) Mixture of Pb and PbO_2^-

213. Which reaction takes place at cathode during electrolysis?

A) Oxidation

B) Reduction

C) Both

D) None

214. In electrolysis of aqueous solution of NaCl which ion is discharged at anode

A) Cl^-

B) OH^-

C) Na^+

D) H^+

215. What is true of following for the given reaction?

$$CrO_7^{2-} + 14H^+ + 6Cl^- \rightarrow 2Cr^{3+} + 3Cl_2 + 7H_2O$$

A) Chromium is oxidized

B) Cl^- is reduced to Cl_2

C) Cl^- is oxidized to Cl_2

D) H^+ is reduced to H_2

216. On the basis of obtained standard deviation values, same set of samples analyzed with different methods can be compared using ……?

A) Q test

B) F test

C) T test

D) Regression coefficient

217. Detection limit is a concentration that gives a signal equals to ……. times to the standard deviation of the blank.

A) 8

B) 5

C) 3

D) 0

218. An analytical method is classified as meso when concentration of the analyte is

A) 10-100 mg

B) >100 kg

C) > 10 kg

D) 1-10 kg

219. How many significant figures are in answer of 47 – 47.

A) 1

B) 2

C) 5

D) 3

220. How many significant figures are in 0.00080670000.

A) 8

B) 2

C) 5

D) 3

221. In atomic absorption spectrophotometer the flame used is

A) air-coal gas

B) air-propane

C) air-acetylene

D) oxyacetylene

222. Argillaceous material includes _____

A) Clay

B) Slate

C) blast furnace slag

D) all above

223. Cement can be synthesized by

A) dry process

B) wet process

C) both

D) None

224. Phosphorus is helpful in the growth of

A) root

B) Leave

C) stem

D) Seed

225. Rotary kiln comprises of zones

A) 4

B) 3

C) 2

D) 5

226. Nutrients that are required in small amount for the growth of plants are

A) nitrogenous fertilizers

B) Micronutrients

C) phosphorus fertilizer

D) all of the above

227. Urea can be most suitably synthesized by the raw material

A) H_2O, N_2 and CO_2

B) H_2, N_2 and CO

C) H_2, CO_2 and H_2O

D) H_2O, N_2 and H_2

228. Urea is a fertilizer

A) Synthetic

B) Natural fertilizer

C) provides micronutrients to the plants

D) inorganic water soluble compound

229. Percentage of nitrogen in urea is

A) 36

B) 46

C) 56

D) 66

230. Both nitrogen and phosphorus can be provided by the fertilizer

A) urea

B) calcium superphosphate

C) diammonium phosphate

D) potassium nitrate

231. Potassium functions in the plant to

A) form starch sugar and fibrous material

B) ripen the seeds and fruits

C) increase the resistance against disease

D) all the above statements are correct

232. Clinker is the

A) roasted calcareous material

B) roasted argillaceous material

C) roasted calcareous and argillaceous material

D) roasted gypsum

233. Cement contains highest percentage of

A) CaO

B) SiO_2

C) Al_2O_3

D) MgO

234. Raw material of cement does not contain

A) limestone

B) Gypsum

C) KNO_3

D) iron oxide

235. Manufacturing of cement process the correct sequence is

A) crushing heating mixing grinding

B) crushing mixing heating grinding and mixing

C) crushing grinding mixing heating

D) mixing heating grinding crushing

236. Correct percentage of clay and limestone for cement preparation is

A) 75% limestone and 25% clay

B) 25% limestone and 75% clay

C) 15% limestone and 55% clay

D) 55% limestone and 15% clay

237. Pure water can be obtained from sea water through the process of

A) centrifugation

B) separating funnel

C) fractional distillation

D) simple distillation

238. Bauxite is used as a raw material by the industry

A) Aluminium Smelting

B) Steel

C) Jute

D) Cement

239. Silica as a raw material is used by the industry

A) Steel

B) Cement

C) Coal

D) Aluminium

240. Which gas is not water soluble

A) ammonia

B) carbon dioxide

C) hydrogen

D) oxygen

241. Main source of thermal pollution is

A) Sun heats up the lakes and ponds

B) Hot water from factories drains into rivers and ponds

C) Hot water drains into rivers and lakes

D) None of these

242. The steel is marketed by public sector plants via

A) TISCO

B) Tata Steel

C) SAIL

D) GAIL

243. For the treatment of industrial effluents, mechanical mean used is

A) sedimentation

B) rainwater harvesting

C) recycling of waste water

D) biologically

244. The highest temperature of decomposition zone in cement manufacturing is

A) 600°C

B) 800°C

C) 1000°C

D) 1200°C

245. Reedy plant from which the word paper is derived is

A) Rose

B) Sunflower

C) Papyrus

D) Water Hyacinth

246. Borax in water is

A) Soluble

B) Insoluble

C) Immiscible

D) Partially soluble

247. Which one of following is not the form of silica

A) Smoky quartz

B) Amethyst quartz

C) Rose quartz

D) None

248. Which of following element is used in navigational equipment?

A) Be

B) Al

C) Mg

D) B

249. Find the successive elements of the periodic table with ionization energies, 2372, 520 and 890 kJ per mole, respectively

A) Li, Be, B

B) H, He, Li

C) B, C, N

D) He, Li, Be

250. Which of the following statements is incorrect?

A) I.E.1 of O is lower than that of N but I.E.2 O is higher than that of N

B) The enthalpy of N to gain an electron is almost zero but of P is 74.3 kJ mol^{-1}

C) Isoelectronic ions belong to the same period

D) The covalent radius of iodine is less than its Van der Waal's radius

251. Two different beakers contain M1-O-H, and M2-O-H solutions separately. Find the nature of the two solutions if the electronegativity of M1 = 3.4, M2 = 1.2, O = 3.5, H = 2.1

A) acidic, acidic
B) basic, acidic
C) basic, basic
D) acidic, basic

252. Which one will have the highest 2nd ionization energy?

A) $1s^2, 2s^2, 2p^6, 3s^1$
B) $1s^2, 2s^2, 2p^4$
C) $1s^2, 2s^2, 2p^6$
D) $1s^2, 2s^2, 2p^6, 3s^2$

252. One mole of ferrous oxalate requires____ moles of MnO_4^- to get oxidized completely in an acidic medium

A) 0.6 moles
B) 0.4 moles
C) 0.2 moles
D) 7.5 moles

253. H_2SO_4 is it not acting as an oxidizing agent?

A) $C + 2H_2SO_4 \rightarrow CO_2 + 2SO_2 + 2H_2O$
B) $CaF_2 + 2H_2SO_4 \rightarrow CaSO_4 + 2HF$
C) $S + 2H_2SO_4 \rightarrow 3SO_2 + H_2O$
D) $Cu + 2H_2SO_4 \rightarrow CuSO_4 + SO_2 + 2H_2O$

254. In which of the following complex, the oxidation number of Fe is +1?

A) $(Fe_4[Fe(CN)_6]_3$

B) $([Fe(H_2O)_5NO]SO_4$

C) $([FeBr_4]^-$

D) $[Fe(H_2O)_6]^{2-}$

255. How many orbitals can have the following set of quantum numbers, n = 3, l = 1, m1 = 0 ?

A) 3
B) 1
C) 4
D) 2

256. Maximum number of electrons in a subshell can be

A) 4l + 2
B) 4l – 2
C) 2n2
D) 2l + 1

257. Which of the following is the atomic number of an element that forms basic oxide?

A) 18
B) 17
C) **19**
D) 15

258. A positive overlap mean

A) Out-phase overlap
B) In-phase overlap
C) Zero overlap
D) None

259. Valence Bond Theory was developed in the year?

A) 1936
B) **1927**
C) 1930
D) 1932

260. According to VBT, the direction of a bond which is formed due to overlapping will be _____.

A) In the same direction in which orbitals are concentrated
B) In the opposite direction in which orbitals are concentrated
C) Perpendicular to the direction in which orbitals are concentrated
D) None of the mentioned

261. Which element would be the least electronegative element with?

A. high I.E. and low E.A.
B. low I.E. and high E.A.
C. low I.E. and low E.A.
D. high I.E. and low E.A.

262. The correct statement with respect to the complexes $Ni(CO)_4$ and $[Ni(CN)_4]^{2-}$ is

A. nickel is in the same oxidation state in both

B. both have tetrahedral geometry

C. both have square planar geometry

D. have tetrahedral and square planar geometry respectively

263. The IUPAC name of the complex $[Co(NH_3)_4Cl_2]Cl$ is

A. dichloro tetraammine cobalt (III) chloride

B. tetraammine dichloro cobalt (III) chloride

C. tetraammine dichloro cobalt (II) chloride

D. tetraammine dichloro cobalt (IV) chloride

264. The number of unidentate ligands in the complex ion is called

A. EAN

B. Coordination number

C. primary valency

D. oxidation number

265. In coordination chemistry, the **donor atom** of a ligand is

A. A Lewis acid.

B. The counter ion

C. The central metal atom.

D. The atom in the ligand that shares an electron pair with the metal.

266. Which one of the following statements is **FALSE** about Crystal Field Theory?

A. **In an octahedral crystal field, the d electrons on a metal ion occupy the e_g set of orbitals before they occupy the t_{2g} set of orbitals.**

B. Diamagnetic metal ions cannot have an odd number of electrons.

C. Low spin complexes can be paramagnetic.

D. Low spin complexes contain strong field ligands.

267. According to, Crystal Field Theory strong field ligands such as CN^-:

A. Usually produce high spin complexes and small crystal field splitting.

B. Usually produce low spin complexes and small crystal field splitting.

C. Usually produce low spin complexes and high crystal field splitting.

D. Usually produce high spin complexes and high crystal field splitting.

268. According to Werner's theory

A. Primary valency can be ionized

B. Secondary valency can be ionized

C. Both cannot be ionized

D. Only primary cannot be ionized

269. Coordination number of Al is

A. 8

B. 6

C. 12

D. 4

270. Ions which are produced from ligands are

A. Cation

B. Anion

C. Complex ion

D. None of above

271. A complex with a strong ligand is called

A. High spin

B. Low spin

C. High energy

D. Stable

272. Which of following is an organometallic complex

A. Lithium ethoxide

B. Ethyl lithium

C. Lithium acetate

D. Lithium carbide

273. The sum of coordination number and oxidation number of the metal M in the complex $[M(en)_2(C_2O_4)]Cl$ (where (en) is ethylenediamine) is

A. 9

B. 6

C. 7

D. 8

274. An example of a sigma bonded organometallic compound is

A. Grignard reagent

B. Ferrocene

C. Cobaltocene

D. Ruthenocene

275. Presence of which among the following minerals in Banana makes them slightly radioactive?

A. Sodium

B. Calcium

C. Magnesium

D. Potassium

276. Which among the following methods can be used to remove the permanent hardness in water due to calcium or magnesium sulphates?

A. Sulphonate method

B. Nitrate method

C. Zeolite method

D. None of these

277. Which of the following is not a non-metallic mineral?

A. Mica

B. Bauxite

C. Granite

D. Silica

278. Which among the following is a common salt in Detergents?

A. **Sulphate**

B. Nitrate

C. Sulphonate

D. Carbonate

279. The soul of chemistry is dealing with_____?

A. Internal structural changes in matter

B. Composition of matter

C. Properties of matter

D. Composition and properties of matter

280. All of the following substances are crystalline except_____?

A. Ice

B. Diamond

C. Sucrose

D. Plastic

281. Which one of the following has the maximum number of isotopes?

A. Oxygen

B. Carbon

C. Tin

D. Chlorine

282. Photochemical smog normally does not contain

A. Carbon dioxide

B. Peroxyacetyl nitrate

C. Ozone

D. Nitrogen dioxide

283. Find the incorrect statement

A. BOD value of clean water is less than 5 ppm

B. Drinking water pH should be between 6.5-8.5

C. Carbon, sulphur and nitrogen oxides are the most widespread air pollutants

D. Dissolved oxygen concentration below 5 ppm is ideal for the growth of fish

284. Alum's capacity to purify water is due to

A. Softens hard water

B. Pathogenic bacteria get destroyed

C. Impurities' coagulation

D. It improves taste

285. Which of the oxide of nitrogen is not a common pollutant?

A. N_2O_5

B. N_2O

C. NO

D. NO_2

286. In the air, N_2 and O_2 occur naturally but they do not react to form oxides of nitrogen because

A. Oxides of nitrogen are unstable

B. Catalyst is required for the reaction

C. The reaction is endothermic

D. N_2 and O_2 do not react with each other

287. Which one of the following is an example of adsorption?

A. Ammonia in contact with water
B. Anhydrous $CaCl_2$ with water
C. Silica gel in contact with water vapours
D. All of these

288. Which of the following colloids are solvent hating?

A. Lyophilic
B. Lyophobic
C. Hydrophilic
D. None of these

289. The process of separating a crystalloid, from a colloid by filtration is called

A. Emulsification
B. Dialysis
C. Coagulation
D. Peptization

290. Ibuprofen contains

A. Only S-enantiomer
B. Only R-enantiomer
C. The racemic mixture of both R and S enantiomer
D. Both R and S enantiomers are active pain killers

291. Nylon threads are made of

A. Polyester polymer
B. Polyamide polymer
C. Polyethylene polymer
D. Polyvinyl polymer

292. The polymer used in making hair synthetic hair wigs is made up of

A. CH_2=CHCl
B. CH_2=$CHCOOCH_3$
C. $C_6H_5CH=CH_2$
D. CH_2=CH-CH=CH_2

293. Important biological molecules functional groups contain
A) Oxygen and/or nitrogen and are acidic
B) Oxygen and a phosphate
C) Nitrogen and a phosphate
D) Oxygen and/or nitrogen and are polar

294. Natural buffers in living systems has acid/base pairs?
A) H_2CO_3/HCO_3^-
B) $H_2PO_4^-/HPO_4^{2-}$
C) $Histidine^+$/histidine
D) **All of these**

295. Alanine, tyrosine, and lysine all are present in
A) DNA
B) Strong base
C) Phospholipid
D) **Protein**

296. Potassium nitrate has
A) Nitrogen 33% Potash 67%
B) Nitrogen 40% Potash 60%
C) Nitrogen 13% Potash 44%
D) Nitrogen 23% Potash 55%

297. Fats accompany high energy than simple sugars due to presence of
A) Carbon atoms
B) hydrogen atoms
C) Covalent bonds
D) hydrogen bonds

298. If ammonia is to be used directly as a fertilizer, depth to which it is injected is?
A) 1 inch
B) 2 inches
C) 4 inches
D) 6 inches

299. Oxygen, Carbon and Nitrogen
A) Can all form covalent bonds with other elements
B) Contain protons and neutrons in their atomic nuclei
C) Are common elements in the molecules that make up living organisms
D) **All of the above**

300. Microtubules, actin filaments and motor proteins all are present in
A) The mechanism of photosynthesis that occurs in chloroplasts
B) The rough ER endoplasmic reticulum) in prokaryotic cells
C) The cytoskeleton of eukaryotic cells
D) the process that moves small molecules across cell membranes

301. ———— is a porous, double phospholipid bilayer structure
A) the nuclear envelope
B) the plasma membrane
C) the mitochondrion
D) the cytoskeleton

302. First line of defense for an organism against attack by an invader is usually
A) To flee or hide
B) its body wall
C) a specific immune response
D) a nonspecific immune response

303. Fluid mosaic model of cell membranes proposes that
A) the most common type of molecules in the membrane are proteins
B) Basic membrane structure results from how the proteins interact with water
C) The membrane is a highly mobile mixture of phospholipids and proteins

D) The unique properties of cell types are determined by their phospholipids

304. In soil, quick hydrolysis of urea yields
A) Ammonium hydroxide
B) Ammonium nitrate
C) Ammonium chloride
D) Ammonium carbonate

305. Simple, double or triple super phosphates all are soluble in?
A) Water
B) Alcohol
C) Ether
D) Benzene

306. Carrier proteins
A) Transport only one substance
B) Transport more than one substance
C) Exchange one substance to another
D) Perform all of these functions

307. Setting of cement is based upon the process of
A) Oxidation
B) Hydration
C) Dehydration
D) Hydrolysis

308. _____ is known as the powerhouse of the cell.
A) Nucleus
B) Cell membrane
C) Mitochondria
D) Lysosomes

309. Digestive enzymes of cellular compounds are confined in
A) Lysosomes
B) Ribosomes
C) Peroxisomes
D) Polysomes

310. Eukaryotic organelles e.g. mitochondria and chloroplasts has highly folded membranes that
A) increase the surface area where key chemical processes can occur
B) help the cell against physical damage
C) make it possible to package large amounts of DNA within the cell
D) assist with cell movement

311. Large amounts of ATP is synthesized from sugars in the presence of
A) Lysosome
B) Vesicles
C) Mitochondria
D) Plasma membrane

312. Diseases are caused by.
A) Pathogens
B) T cells
C) Lymphocytes
D) Macrophages

313. Palmitate has 16 carbon atoms having
A) 2 double bonds
B) 3 double bonds

C) One double bond
D) None of these

314. For human nutrition the lowest energy value lipid is
A) Olive oil
B) Olestra
C) Margarine
D) Cardiolipih

315. Metabolism of fructose is done by
A) fructose 1-phosphate pathway
B) fructose 6-phosphate pathway
C) glyceraldehyde 3-phosphate pathway
D) both A and B

316. Human stomach cannot digest
A) Starch
B) complex carbohydrates
C) denatured proteins
D) Cellulose

317. Electron microscope instead of light microscope is necessary to observe?
A) Animal
B) Bacterial
C) Protist
D) All of these

318. In paper making process filler used is
A) Starch
B) Cellulose
C) Glucose
D) Fructose

319. Additive used in paper industry is
A) Glucose
B) Starch
C) Alum
D) TiO_2

320. Standard enthalpy of combustion of ethanol is
A) -100 kj/mole
B) -1250 kj/mole
C) -1368 kj/mole
D) -1500 kj/mole

321. Equilibrium can exist at the reaction completed
A) 50%
B) < 50%
C) > 50%
D) any of above

322. Moles of a substance per litre is known as
A) Molar concentration
B) active weight
C) composition
D) concentration

323. Rate of forward and backward reaction becomes equal at state
A) Homogenous

B) equilibrium
C) heterogeneous
D) static

324. Products and reactants are present in sufficient amount in reaction mixture when kc is
A) Neither very large nor very small
B) very small
C) very large
D) infinity

325. Concentration is taken in
A) mol. liter
B) mol/liter
C) g equivalent liter
D) g. Lit^{-1}

326. When both forward and backward reaction proceeds at equal rate it is
A) State of equilibrium
B) dynamic equilibrium
C) chemical equilibrium
D) static equilibrium

327. An example of _____ equilibrium is when evaporation rate becomes equal to rate of condensation
A) Dynamic
B) chemical
C) static
D) physical

328. Dynamic equilibrium means the molar concentration of the reactants and products
A) Becomes constant
B) Becomes infinitely
C) Decreases
D) increases

329. According to law of mass action rate of reaction is proportional to the product of active masses of
A) Product
B) reactant
C) concentration
D) catalyst

330. When reactant and product are in same phase equilibrium is
A) Dynamic
B) heterogeneous
C) homogenous
D) static

331. Equilibrium involving different phases of reactants and products is
A) Dynamic
B) heterogeneous
C) homogenous
D) static

332. Multiple phases of reactant and products means a phase
A) Homogenous
B) heterogamous
C) dynamic
D) static

333. A heterogeneous equilibrium means reactant and products are in
A) Gaseous phase
B) liquid phase
C) solid phase
D) more than one phase

334. When a system loses some energy ΔE carries a
A) Negative sign
B) Positive sign
C) Neutral sign
D) No sign

335. Along with the average energy of reactants additional energy required for successful reaction is called
A) Enthalpy function
B) Heat of reaction
C) effective energy
D) activation energy

336. A substance that alters the rate of reaction without itself being used is called
A) Catalyst
B) electrolyte
C) acid
D) poison

337. A catalyst alters
A) The direction of a reaction
B) **The rate of a reaction**
C) The concentration of a reaction
D) The molecularity of a reaction

338. Rate constant K_c
A) Does not change with the increase of temperature
B) Change with the change of temperature
C) does not change with the decrease in temperature
D) None of these

339. Law of mass action states that rate of reaction is directly proportional to the
A) Size of the container
B) Molar conc. of reactants
C) nature of reactants
D) All of the above

340. Liquid and its vapors acquire _____ at constant temperature
A) Constant equilibrium
B) static equilibrium
C) dynamic equilibrium
D) none of these

350. If concentration of compound is taken in molar units then the equilibrium constant is
A) K_i
B) K_{ip}
C) K_{ef}
D) K_i

351. Conventionally product concentration is taken in
A) numerator
B) denominator
C) both of these
D) fractions

352. Which of the following has lowest heat of hydration?
A) Li^+
B) Na^+
C) K^+
D) Mg^{2+}

353. How much energy is absorbed during dissolution of one mole of NaCl
A) 2.008 KJ/mol
B) 1.008 KJ/mol
C) 4.008 KJ/mol
D) 3.008 KJ/mol

354. NaCl is used because of its ———— property in freezing the ice cream
A) Constitutive property
B) Additive property
C) Colligative property
D) Roault's law

355. ———— has the same oxidation number in all of its known compounds?
A) Beryllium
B) Chlorine
C) Bromine
D) Nitrogen

356. In K_2MnO_4, oxidation number of Mn is
A) +7
B) +6
C) +5
D) +4

357. Which statement is correct about standard hydrogen electrode?
A) 1.0M HCl solution is used
B) H_2 gas at 1 atm pressure is present
C) Platinum electrode is used
D) All of the above

358. Electrolysis is a process which utilizes
A) Chemical energy
B) Electrical energy
C) Heat energy
D) Biochemical energy

359. Standard hydrogen electrode has an arbitrarily fixed potential
A) 0.00 volt
B) 1.00 volt
C) 0.10 volt
D) 2.00 volts

360. The oxidation number of chromium in $K_2Cr_2O_7$ is
A) 14
B) 12
C) 6
D) 7

361. What is correct about electrolysis of molten NaCl
A) Oxidation takes place at cathode
B) Cl_2 gas is produced at anode
C) Reduction occurs at anode
D) H_2 gas is produced at cathode

362. Oxidation state of oxygen in OF_2 is
A) 0
B) +1
C) -2
D) +2

363. In superoxides, the oxygen has oxidation number
A) 0
B) +1
C) -1/2
D) -1

364. An electrochemical cell which produces electricity with a redox reaction is called a
A) Voltaic cell
B) Standard cell
C) Reversible cell

D) Electrolytic cell

365. A non-spontaneous redox reaction takes place as a result of electricity in
A) Voltaic cell
B) Denial cell
C) Dry cell
D) Electrolytic cell

366. Oxidation state of sulfur in SO_3^{2-}?
A) -4
B) -2
C) +2
D) +4

367. In lead storage batteries the cathode is made of
A) Pb
B) Pb coated with PbO_2
C) $PbSO_4$
D) Mixture of Pb and PbO_2^-

368. Which reaction takes place at cathode during electrolysis?
A) Oxidation
B) Reduction
C) Both
D) None

369. In electrolysis of aqueous solution of NaCl which ion is discharged at anode
A) Cl^-
B) OH^-
C) Na^+
D) H^+

370. What is true of following for the given reaction?

$$CrO_7^{2-} + 14H^+ + 6Cl^- \rightarrow 2Cr^{3+} + 3Cl_2 + 7H_2O$$

A) Chromium is oxidized
B) Cl^- is reduced to Cl_2
C) Cl^- is oxidized to Cl_2
D) H^+ is reduced to H_2

371. on the basis of obtained standard deviation values, same set of samples analyzed with different methods can be compared using ————?
A) Q test
B) F test
C) T test
D) Regression coefficient

372. Detection limit is a concentration that gives a signal equals to ———— times to the standard deviation of the blank.
A) 2
B) 4
C) 3
D) 5

373. Which reaction takes place at cathode during electrolysis?
A) Oxidation
B) Reduction
C) Both
D) None

374. How many significant figures are in answer of 47 – 47. 213.
A) 1
B) 2
C) 5
D) **3**

375. How many significant figures are in 0.00080670000.
A) 8
B) 2

C) 5
D) 3

376. Which of the following has a triple bond?
A) C2H6
B) C3H4
C) C3H8
D) C3H6

377. Which of the following has a triple bond?
A) C2H6
B) C3H4
C) C3H8
D) C3H6

378. Cement can be synthesized by
A) dry process
B) wet process
C) both
D) None

379. Phosphorus is helpful in the growth of
A) root
B) Leave
C) stem
D) Seed

380. Rotary kiln comprises of zones
A) 4
B) **3**
C) 2
D) 5

381. Nutrients that are required in small amount for the growth of plants are
A) nitrogenous fertilizers
B) Micronutrients
C) phosphorus fertilizer
D) all of the above

382. Urea can be most suitably synthesized by the raw material
A) CH4, N2 and CO2
B) H2, N2 and CO
C) H2, CO2 and H2O
D) H2O, N2 and H2

383. Urea is a fertilizer
A) Synthetic
B) Natural fertilizer
C) provides micronutrients to the plants
D) inorganic water soluble compound

384. Percentage of nitrogen in urea is
A) 36
B) 46
C) 56
D) 66

385. Both nitrogen and phosphorus can be provided by the fertilizer
A) urea
B) calcium superphosphate
C) diammonium phosphate
D) potassium nitrate

386. Potassium functions in the plant to
A) form starch sugar and fibrous material
B) ripen the seeds and fruits
C) increase the resistance against disease
D) all the above statements are correct

387. Clinker is the
A) roasted calcareous material

B) roasted argillaceous material
C) roasted calcareous and argillaceous material
D) roasted gypsum

388. Cement contains highest percentage of
A) CaO
B) SiO2
C) Al2O3
D) MgO

389. Raw material of cement does not contain
A) lime stone
B) Gypsum
C) KNO3
D) iron oxide

390. Manufacturing of cement process the correct sequence is
A) crushing heating mixing grinding
B) crushing mixing heating grinding and mixing
C) crushing grinding mixing heating
D) mixing heating grinding crushing

391. Correct percentage of clay and lime stone for cement preparation is
A) 75% lime stone and 25% clay
B) 25% lime stone and 75% clay
C) 15% lime stone and 55% clay
D) 55% lime stone and 15% clay

392. Country that has largest installed capacity of spindles is
A) Japan
B) Philippines
C) China
D) India

393. Pure water can be obtained from sea water through the process of
A) centrifugation
B) separating funnel
C) fractional distillation
D) simple distillation

394. Bauxite is used as a raw material by the industry
A) Aluminium Smelting
B) Steel
C) Jute
D) Cement

395. Silica as a raw material is used by the industry
A) Steel
B) Cement
C) Coal
D) Aluminium

396. Which gas is not water soluble
A) ammonia
B) carbon dioxide
C) hydrogen
D) Oxygen

397. Main source of thermal pollution is
A) Sun heats up the lakes and ponds
B) Hot water from factories drains into rivers and ponds
C) Hot oil drains into rivers and lakes
D) None of these

398. steel is marketed by public sector plants via
A) TISCO
B) Tata Steel
C) SAIL
D) GAIL

399. For the treatment of industrial effluents, mechanical mean used is

A) sedimentation
B) rainwater harvesting
C) recycling of wastewater
D) biologically

400. The molecular mass of oxygen is
A) 8
B) 32
C) 44
D) 8

401. Majority of the elements exist in the which form
A) gas
B) liquid
C) plasma
D) solid

402. How many elements are metals
A) 40%
B) 80%
C) 60%
D) 50%

403. Mercury is represented by
A) Me
B) Na
C) Au
D) Hg

404. According to Dalton, atom is
A) hard
B) all
C) indivisible
D) dense

405. Which of the following adsorbents is used for separation of xanthophyll and carotenoids?
A) Silver
B) Alumina
C) Starch
D) Calcium carbonate

406. Example of the microwave active molecule is
A) HCl
B) CO
C) $CHCl_3$
D) CH_3Cl

407. Cathode rays are used in the discovery of
A) proton
B) neutron
C) atom
D) electron

408. Canal rays is used for the discovery of
A) proton
B) electron
C) neutron
D) atom

409. Two partially miscible liquids form a single phase at a temperature which is known as
A) Transition temperature
B) Absolute temperature
C) Consulate temperature
D) Room temperature

410. At what conditions the molar volume of CO_2 is maximum?
A) STP
B) **127˚C & 1 atm**
C) 0˚C and 1 atm
D) 273 K and 1 atm

411. All gases liquefy before reaching at
A) 373 K
B) 273 K
C) -473 K
D) 0 K

412. The number of electrons in L shell
A) 2
B) 18
C) 8
D)32

413. Acetone and chloroform mix with each other because of
A) Intermolecular hydrogen bonding
B) Dipole-dipole interaction
C) Instantaneous dipole
D) All of the above

414. Which of the following solid substances is considered as pseudo solid?
A) NaCl
B) Glass
C) CaF_2
D) All

415. Antifreeze in the automobile is an important application of
A) Constitutive property
B) Additive property
C) Colligative property
D) Chemicals

416. Isotopes of chlorine is
A) 2
B) 1
C) 3
D) 7

417. What information is obtained from collision theory?
A) Rate of reaction
B) order of reaction
C) Molecularity of reaction
D) All of these

418. The reaction of hydrolysis of ethyl-acetate ester is a
A) 1st order
B) 2nd order
C) 3rd order
D) zero order

419. For the treatment of cancer which isotopes is used
A) Sr-90
B) P-32
C) Co-60
D) Ne-20

420. Which element isotopes is used in power generation
A) chlorine
B) uranium
C) hydrogen
D) carbon

421. In 1913, who discovered new property of the element
A) Dobereiner
B) Newlands
C) H. Moseley
D) Mendeleev

422. What is the order of a reaction with Rate = K $[N_2O_5]$?
A) First order
B) Pseudo first order
C) Second order
D) Third order

423. Main component of solution is
A) Solvent
B) Solute
C) Solvent as well as solute
D) Solid particles

424. At given temperature, if maximum amount of solute is present in a solvent, it gives
A) Saturated solution
B) Unsaturated solution
C) Supersaturated solution
D) Impure solution

425. Percentage composition may have possible relations
A) Four
B) Five
C) Three
D) One

426. The oxidation number in elemental states is always
A) Positive
B) Negative
C) Zero
D) Non-zero

427. K^+ has oxidation number
A) +1
B) +2
C) +3
D) -2

428. Ca^{2+} shows oxidation number
A) +1
B) +2
C) +3
D) -2

429. Except metal Hydrides, hydrogen shows oxidation state
A) 0
B) +1
C) -1
D) -2

430. In metal hydrides, oxidation state of hydrogen is
A) 0
B) +1
C) -1
D) ½

431. Oxygen except peroxides and super oxides shows oxidation state of
A) -1
B) -2
C) +2
D) -1/2

432. In peroxides oxygen shows oxidation number
A) -1
B) -2
C) +2
D) -1/2

433. Oxidation state of oxygen in super oxides is
A) -1
B) -2
C) +2
D) -1/2

434. The oxidation number of oxygen in OF_2
A)-1
B) -2
C) +2
D) -1/2

435. The oxidation number of each element of group VII-A in binary compounds is
A) -1
B) -2
C) +2
D) 0

436. Group IA elements shows oxidation state
A) -1
B) -2
C) +1
D) +2

437. Group IIA elements shows oxidation state of
A) -1
B) -2
C) +2
D) +4

438. Group IIIA elements shows oxidation state of
A) -1
B) -2
C) +2
D) +3

439. In a neutral compound total sum of all the oxidation states is always
A) Zero
B) One
C) Two
D) Three

440. Chromium shows oxidation number in sodium dichromate
A) +4
B) +6
C) +5
D) +8

441. Noble gases show oxidation number
A) +1
B) 0
C) -1
D) -2

442. Chromium has oxidation number in $K_2Cr_2O_7$
A) +4
B) +6
C) +5
D) +8

443. Sulpher in SO_2 has oxidation number
A) -4
B) +6
C) +4
D) +2

444. Iron in $K_3[Fe(CN)_6]$ shows oxidation state
A) +2
B) +3
C) +4
D) +1

445. Which period is called short period
A) second
B) first
C) third
D) seven

446. There are how many groups in periodic table
A) 18
B) 9
C) 7
D) 5

447. 1 litre of solution having one mole of solute is
A) 1 molar
B) 1molal
C) 1 Normal
D) None of the above

448. $CaCO_3$ has the percentage composition
A) Ca 1%, Cl%, O_2 3%
B) Ca 40%, C 12%, O_2 48%
C) Ca 12%, C 40%, O_2 48%
D) Ca 48%, C 12%, O_2 40%

449. Atomic size trend in period
A) increase
B) decrease
C) same
D) no effect

450. Technique that can be used to separate aniline from a mixture is
A) Fractional crystallization
B) Fractional distillation
C) Vacuum distillation
D) Steam distillation

451. Which units of solution are independent of temperature
A) Molarity
B) Normality
C) Formality
D) Molality

452. If a solution is made by mixing 20 ml of N/2 H_2SO_4, 5ml of N-HCl, and 30ml of N/3 HNO_3 in one litre, resulting normality will be
A) N/5
B) N/10
C) N/20
D) N/40

453. In NH_4OH silver halide that is least soluble
A) AgBr
B) AgF
C) AgCl
D) Agl

454. Ionization energy trend in group
A) increase
B) decrease
C) no effect
D) same

455. In qualitative analysis of Fe, during precipitation NH_4Cl is added before NH_4OH to
A) Decrease concentration of OH^- ions
B) Prevent interference by phosphate ions
C) Increase concentration of Cl^- ions
D) Increase concentration of NH_4^+ ions

456. When HCl is added to stannous sulphide solution made with yellow ammonium sulphide, the precipitates formed are
A) SnS
B) SnS_2
C) Sn_2S_2
D) $(NH_4)_2$ SnS_2

457. Which one of the following can be used instead of NH_4Cl for the precipitation of the third group radicals
A) Ammonium nitrate
B) Ammonium sulphate
C) Ammonium oxalate
D) Sodium chloride

458. Before the analysis of III group radicals the conc. Nitric acid is added to
A) Oxidise any remaining H_2S

B) Form nitrate which gives granular ppt.
C) Convert ferrous into ferric ions
D)Increase ionization of NH_4OH

459. When KI is heated by mixing with conc. H_2SO_4, specie formed is
A) Hl
B) I_2
C) HlO_3
D) KlO_3
460. IVth group of basic radicals is analyzed in the presence of H_2S by adding
A) HCl
B) NaOH
C) NH_4Cl
D) NH_4Cl and NH_4OH

461. If flame test of a salt generates brick red color, it indicates
A) Na
B) K
C) Sr
D) Ca

462. C_5H_{12} generates 1 signal in the proton NMR while 2 signals are generated in C-13 NMR, compound is
A) pentane.
B) 2-methylbutane.
C) 2,2-dimethylpropane.
D) Cannot tell without more information.

463. How many ml of 1M H_2SO_4 solution can be neutralize by using 10 milliliters of 1M NaOH solution?
A) 2.5 ml
B) 5.0 ml
C) 10 ml
D) 20 ml

464. Molal solution means one mole of solute dissolved in
A) 1000 gm of the solvent
B) One litre of the solvent
C) One litre of the solution
D) 22.4 litre of the solution

465. 0.1 M solution is basic by
A) Ammonium acetate
B) Ammonium chloride
C) Ammonium sulphate
D) Sodium acetate

466. Heat changes in a chemical are studied in the branch of chemistry is
A) Thermochemistry
B) Electrochemistry
C) Photochemistry
D) Thermodynamics

467. In Joules calorie is equivalent
A) 0.418 J
B) 41.84 J
C) 4.184 J
D) 418.45 J

468. Highest electronegativity is of which element.

A) oxygen
B) fluorine
C) hydrogen
D) carbon

469. System always tends to be stable by attaining a state of
A) Lowest energy
B) Same as before
C) Higher energy
D)Reverse to original energy

470. If heat is transferred from the system to the surrounding process is called
A) Endothermic
B) Exothermic
C) Fast reaction
D) Emitter

471. Heat is released in reaction is
A) Exothermic
B) Endothermic
C) None of these
D)Both of these

472. If heat change is negative, reaction is said to be
A) Reversible
B) At equilibrium
C) Exothermic
D) Endothermic

473 The number of blocks in periodic table.
A) 4
B) 3
C) 2
D) 6

474. The bond which is form due to mutual sharing is
A) covalent
B) ionic
C) coordinate covalent
D) metallic

475. The bond which is form due to complete transfer of electron is
A) coordinate covalent
B) covalent
C) ionic
D) metallic

476. Sodium chloride is the example of the which bond
A) covalent
B) coordinate covalent
C) ionic
D) metallic

477 Metal are present at which side of the periodic table
A) middle
B) right
C) left
D) right top

478. Not a colligative property?
A) Density
B) depression of freezing pint
C) Elevation of boiling point
D) Osmotic pressure

479. Which solution is gas in gas
A) air
B) fog
C) butter
D) cheese

480. Oxidation is the addition of
A) hydrogen
B) electron
C) oxygen
D) proton

481. Reduction is the removal of
A) hydrogen
B) oxygen
C) electron
D) nothing

482. Metals are
A) neutral
B) electropositive
C) electronegative
D) nothing

483. Mathematically rate of reaction is
A) dc/dt
B) dt/dc
C) dC/Dt
D) d $C)^2/dt)^2$

484. By increasing the concentration of reactants
A) Increases the number of collisions directly
B) Has no effect on the number of collisions
C) Has inverse effect on the number of collisions
D) Decrease the number of collisions

485. In group electron affinity is
A) Increasing
B) decreasing
C) Not changing
D) same

486. Units for Concentration of a solution are
A) Mol/litre
B) $mol^{-1}/litre^{-1}$
C) $mol^{-1}l$
D) mol l
487. The rate of reaction has units
A) Mol $l^{-1}s^{-1}$
B) $Mol^{-1}l^{-1}s^{-1}$
C) Mol l s^{-1}
D) Mol l s

488. If concentration change for a reaction is zero, the rate of reaction will be
A) 1
B) 0
C) depends on time
D) Impossible to predict

489. Electronegativity of Li is
A)1.8
B) 2.0
C) 1.6
D) 1.0

490. Electronegativity of oxygen is
A) 3.5
B) 4
C) 2.5
D) 3

491. The number of subshells is
A) 2
B) 4
C) 6
D) 8

492. Increase in temperature causes the rate of reaction to
A) Increase greatly
B) Does not increase
C) Increase a little
D) decrease rapidly

493. Correct units of reaction rate are?
A) mol/dm^3
B) Mol/s
C) Mol/dm^3s
D) S

494. By increasing concentration, the rate of reaction
A) Increases
B) Decreases
C) Remains same
D) Not effected at all

495. Units for the rate of gaseous reaction are expressed as
A) Grams/s
B) Atomic s^{-1}
C) Mol l^{-1} s^{-1}
D) Atmospheric s^{-1}

496. Sodium donate how many electron
A) 4
B) 1
C) 2
D) 3

497. Neon donate how many electron
A) 1
B) 3
C) 2
D 0

498. Nucleus contain
A) neutron
B) proton and neutron
C) proton
D) electron

499. When subjected to a strong magnetic field
A) one measures an IR spectrum
B) the swaying of an atom becomes larger
C) the nuclear spins orient themselves
D) C atoms orient only

500. How much percent oxygen is present in oceans
A) 78
B) 86
C) 40
D) 47

501. Extinction coefficient is
A) a constant of a substance
B) a universal constant
C) equal to one
D) equal to 0

502. If concentration of substance is doubled
A) the wavelength of the absorption is different
B) the extinction coefficient is twice as large
C) the extinction is twice as large
D) 4 times large

503. Infrared radiations are
A) waves of warmth
B) possessing more energy than UV waves
C) red
D) Cool waves

504. In IR spectrum, the units of entity taken on the abscissa are
A) meter
B) centimeter
C) per centimeter
D) None of these

505. Aqua-regia is formed by mixing
A) 1part conc. HCl and 3 parts conc. HNO_3
B) 3part conc. HCl and 1 part conc. HNO_3
C) 2parts conc. HCl and 1 part conc. HNO_3
D) 3parts conc. HCl and 2 parts conc. HNO_2

506. Why HCl is preferred over HNO_3 to make solutions in inorganic salt analysis?
A) Nitrates are not decomposed to sulphides
B) Nitric acid contains nitrogen
C) Hydrochloric acid is not an oxidizing agent
D) Chlorides are easily converted to sulphides

507. The units taken on abscissa in an NMR spectrum are
A) δ
B) Hertz
C) ppm

D) nm

508. Largest chemical shift signal appeared in a ^{13}C NMR spectrum is due to
A) C=O groups
B) CH_3 groups
C) aromatic C-Nuclei
D) All have same value

509. In NMR spectrum, a triplet means
A) a triple linear signals
B) three signals
C) three spectrums
D) Due to doublet in vicinity

510. In a ^{1}H NMR at a neighboring C atom a CH_2 group generates
A) doublet
B) triplet
C) quadruplet
D) pentate

511. In aromatic C nucleus, a hydrogen signal is expected at
A) 2 ppm
B) 4 ppm
C) 7 ppm
D) 9 ppm

512. ^{13}C NMR spectrum
A) a triplet is evidence of a CH_3 group presence
B) the signals are between 0 and 10 ppm
C) every C atom generates a signal
D) every H atom generates a signal

513. In mass spectrometry
A) the analyzed substance remains intact
B) large quantities of the substance are required
C) the analyzed substance is ionized
D) All

514. In qualitative analysis Al^{3+}, Cr^{3+} and Fe^{3+} are kept in same group because
A) Carbonates are insoluble in ammonia
B) Hydroxides are insoluble in ammonia
C) Sulphides are soluble in acids
D) Electronic charge is the same

515. Mass spectrometry provides the information about
A) the color of a substance
B) the molecular mass of a substance
C) the reactivity of a substance
D) Physical properties

516. Function of magnet in mass spectrometer is to work as
A) recorder for the NMR spectrum
B) accelerator for the ions
C) deflector for the ions
D) protector for the ions

517. Approximate weight of an element having specific heat 0.16, will be
A) 16
B) 40

C) 30
D) 64

518. Most de-shielded protons are present in
A) CH_3Cl
B) CH_3I
C) CH_3Br
D) CH_4

519. Most de-shielded methyl protons are present in
A) tetramethylsilane
B) methyl fluoride
C) methanol
D) methylamine

520. Splitting pattern of methylene protons in propane is
A) triplet
B) quartet
C) doublet
D) septet

521. Methylene protons shows signal for of butane
A) doublet
B) triplet
C) mulitplet
D) none of these

522. Amount of O_2 liberated when 10 ml 20 vol solution of H_2O_2 is heated
A) 20 ml
B) 30 ml
C) 200 ml
D) 400 ml

523. At upper consulate temperature of 49.1℃ Methanol cyclohexane system show percentage
A) 21%
B) 23%
C) 27%
D) 29%

524. Phenol water system homogenizes as
A) 30% Phenol, 70% water
B) 35% phenol, 65% water
C) 34% phenol, 66 % H_2O
D) 40% Phenol, 60 % H_2O

525. Single layer of water aniline system appears at
A) 120℃
B) 134℃
C) 165℃
D) 167℃

526. Consulate temperature of Methanol cyclohexane system is
A) 35.1℃
B) 41.3℃
C) 49.1℃
D) 51.4℃

527. Raoult's law depicts that the lowering of V.P is
A) Inversely proportional to mole fraction of solute

B) Directly proportional to mole fraction of solute
C) Inversely proportional to absolute T
D) Directly proportional to absolute T

528. Relative lowering of vapor pressure is
A) Independent of T
B) depends upon the concentration of solute
C) Is constant when equimolar proportion of different solutes are dissolved in the same mass
D) all of the above

529. Substance having chemically attached water molecules is called
A) Crystal
B) Hydrate
C) Solvate
D) None of these

530. If CH_3COONa is hydrolyzed the solution produced will be
A) Acidic
B) Basic
C) neutral
D) None of these

531. At a given temperature the amount of solute dissolved in 100 g of solvent is known as
A) Solubility Product
B) Solubility
C) Molarity
D) Normality

532. If Cl^- ions are added to saturated solution of KCl, solubility of KCl will
A) Decrease
B) Increases
C) Remains the same
D) Not effect at all

533. The substance that does not dissolve in sufficient amount is known as
A) Sparingly soluble
B) Miscible
C) Remains same
D) Not effect at all

534. At freezing point temperature, solid and liquid phases of given substance have the
A) different vapor pressure
B) Same vapor pressure
C) Absolute vapor P
D) none of these

535. Elevation of boiling point of a substance
A) Can be studied by Beckmann method
B) Can be studied by Landberger,s method
C) cannot be studied by Landbergers method
D) None of these

536. Following is the colligative property
A) lowering of vapor pressure
B) elevation of boiling point
C) Depression of freezing point
D) All of the above

537. Colligative properties are dependent on
A) The number of solute ions
B) The number of solvent ions
C) Both A & B
D) Might A not B

538. When the solvent is containing dissolved nonvolatile solute particles is
A) Vapor pressure is decreased
B) Vapor pressure is elevated
C) vapor pressure is neither decreased nor increased
D) Vapor pressure is either decrees or increase

539. Greater the concentration of solute
A) The higher will be boiling point
B) The lower will be boiling point
C) The boiling point is not affected
D) no change in vapor pressure

540. There is 1g CO_3^{-1}present in 1000g aq solution of $CaCO_3$. The concentration of solution is
A) 1000 ppm
B) 100 ppm
C) 10 ppm
D) 10, 000 ppm

541. For the preparation of 250 cm^3 of 0.1 M solution how much NaOH is required?
A) 1g
B) 10 g
C) 2g
D) 6g

542. 2%NaOH solution has molality nearly
A) 0.5
B) 0.05
C) 0.25
D) 2.05

543. In a 500 cm^3 of 3M solution the number of moles of solute are
A) 1
B) 1.5
C) 3
D) 4

544. If 8g of NaOH dissolved in 500 cm^3 of solution the molarity will be?
A) 0.2M
B) 0.04M
C) 0.4M
D) 0.8M

545. Molarity of a solution has units
A) moles/Kg
B) g/dm^3
C) dm^3/mol
D) Mol/dm^3

546. The mole fraction is expressed in units
A) mol/dm^3
B) Moles/kg
C) g/dm^3
D) None

547. Mole fraction of oxygen in 7g nitrogen and 8g oxygen mixture is
A) 1
B) 0.1
C) 0.5
D) 0.2

548. Electrolysis of KNO_3aq) generates
A) K and N
B) K and N_2
C) N_2 and O_2
D) K and O

549. NaOH electrolysis gives
A) H is collected at anode
B) is collected at anode
C) H_2 at anode
D) O_2 at anode

550. In down cell product is obtained by electrolysis of
A) Aqueous solution of NaCl
B) Fused sodium chloride
C) Aqueous solution & fused NaCl at some time
D) Either A or B

551. Caustic soda is prepared industrially from
A) Concentrated solution of NaCl
B) Any solution of NaCl
C) Dilute solution of NaCl
D) Fused NaCl

552. Magnesium metal is obtained in electrolytic cell by
A) Concentrated aqueous solution of its chloride
B) Dilute aqueous solution of its chloride
C) Its fused chloride
D) Any solution

553. Aluminum is obtained in electrolysis process from
A) Fused Bauxite
B) In the presence of catalyst
C) In the presence of fused cryolite
D) All of the above

554. Cell that produces electricity is called
A) Dry cell
B) Unit cell
C) Voltaic cell
D) Battery cell

555. Cathode attracts
A) Cations
B) Anions
C) Hydroxyl ions
D) Oxide ions

556. Anode attracts
A) Anions
B) Cations
C) Electrodes

D) Neutral in nature

557. Reducing agent is itself
A) Oxidized
B) Ionized
C) Reduced
D) Neutralized

558. Addition of oxygen or removal of hydrogen is called
A) Oxidation reaction
B) Reduction reaction
C) Half-cell reaction
D) Over cell reaction

559. Oxidation takes place at
A) Anode
B) Cathode
C) Electrode
D) Ion solution

560. Electrons are received at
A) Anode
B) Cathode
C) Electrode
D) wall of cell

561. Electrons are lost in
A) Oxidation
B) Reduction
C) Electrolysis
D) Valiancy

562. $CaCO_3 \rightarrow CaO + CO_2$ here calcium undergoes.
A) Oxidation
B) Reduction
C) No change in oxidation state
D) Both oxidation and Reduction

563. Emf generated by voltaic cell is called
A) Oxidation potential
B) Cell potential
C) Redox potential
D) None of above

564. Electromotive force is measured in
A) Volts
B) Joule
C) Coulomb
D) Ohm

565. Electrolyte can conduct electricity
A) In the form of solution
B) In fused state
C) In any form
D) Either A or B

566. SHE arbitrarily taken as
A) 0.0 volt
B) 1.0 volt

C) 0.10 volt
D) 1.20 volt

567. Metal can replace other in a reaction if it has place in series
A) Below
B) Above
C) Between
D) Anywhere

568. Lead accumulator battery has cathode made of
A) Pb
B) PbO_2
C) PbO_3
D) CuO

569. The single cell of lead accumulator generates
A) 2 V
B) 2.5 V
C) 4 V
D) 8 V

570. Alkaline battery cell generates
A) 1 volt
B) 1.5 volt
C) 2 volt
D) 5 volt

571. Solute particles are surrounded by solvent molecules in
A) Hydrolysis
B) Hydration
C) Solvation
D) Dissolution

572. Solution having higher amount of salt dissolved is
A) Saturated solution
B) Buffer solution
C) Concentrated solution
D) Unsaturated solution

573. The enthalpy change for the reaction of an acid and base is called
$NaOH + HCl \rightarrow NaCl + H_2O$
A) Heat of reaction
B) Heat of formation
C) Heat of neutralization
D) Heat of combustion

574. In a spontaneously endothermic reaction the temperature of the surrounding
A) Remains constant
B) Increases
C) Decreases
D) Remain unchanged

575. The enthalpy of any element in its standard state is
A) 1 kJ mol^{-1}
B) Zero
C) 298 kJ mol^{-1}
D) Always +ve

576. The unit of enthalpy is
A) Joule
B) Coulomb
C) Volt
D) Kg m^{-1} s^{-1}

577. Total kinetic energy of molecules is due to sum of its
A) Translational motion
B) Rotational motion
C) Vibrational motion
D) All

578. Which property of gas is state function?
A) Enthalpy
B) Entropy
C) Pressure
D) All of these

579. Which of the following is and endothermic process?
A) Condensation of steam
B) Freezing of water
C) Electrolysis of water
D) All

580. In a bomb calorimeter the reaction is carried out at ————
A) Constant volume
B) Constant pressure
C) Constant pressure
D) a, b and c condition

581. Solubility of $Ca(OH)_2$ is exothermic and will increase
A) At high temperature
B) At low temperature
C) Temperature independent
D) None

582. Ionization constant K_a for acetic acid at 25°C is
A) 1.85×10^{-5}
B) 1.85×10^{-10}
C) 1.85×10^{-15}
D) 1.85×10^{-20}

583. The rate of reaction ———— as reaction proceeds.
A) Increases
B) Decreases
C) Remains same
D) May decrease or increase

584. What is the pH of pure water?
A) 6.2
B) 7
C) 14
D) 0

585. Human blood has a pH value of
A) 7.0
B) 7.35
C) 7.85
D) 6.65

586. 0.001N NaOH aqueous solution has pH
A) 11
B) 3
C) 8
D) 12

587. The dissociation constant for water at 25°C is
A) 1×10^{-7}
B) 1×10^{-14}
C) 1×10^{-19}
D) 7×10^{-14}

588. If H^+ ions concentration is 1×10^{-7} its pH will be
A) Acid
B) Basic
C) Neutral
D) Zero

589. Crystalline solids containing water are called
A) Hydrates
B) Hydrides
C) Hydrolyzed
D) All above

590. Azeotropic mixtures can be separated by
A) Simple distillation
B) Fractional distillation
C) Vacuum distillation
D) All

591. The molality of solution containing 10g of NaOH/Kg solution is
A) 0.25m
B) 0.5m
C) 1.0m
D) 2.0m

592. Hydrolysis of potassium acetate produces
A) Acidic solution
B) Basic solution
C) Neutral solution
D) None of these

593. One molal solution contains
A) 1 dm^3 of solvent
B) 1 dm^3 of solution
C) 1000 g of solvent
D) 22.4 dm^3 of solution

594. In a solution the sum of mole of fractions of all components is always equal to
A) Zero
B) One
C) Two
D) 100

595. Two miscible liquids obey Raoult's law if
A) $\Delta H = 0$
B) $\Delta V = 0$
C) Both ΔH and ΔV are zero
D) Neither ΔV nor ΔH should be zero

596. Which of the following compounds has highest freezing point?
A) 1 mole NaCl
B) 1 mole KCl
C) 1 mole $CaCl_2$
D) 1 mole Urea

597. 10% aqueous solution of glucose freezes at
A) $0^{\circ}C$
B) $< 0^{\circ}C$
C) $> 0^{\circ}C$
D) Suspension

598. Paschen, Bracket and Pfund series of emission spectra of atomic hydrogen lie in
A) Infrared region
B) X-ray region
C) Ultraviolet region
D) Microwave region

599. According to Aufbau's principle which one of the following orbitals should be filled first?
A) 3d
B) 4f
C) 5d
D) 4s

600. X-rays are attracted towards
A) Anode
B) Cathode
C) Both (a & b)
D) All

601. Which of the following rays are used in television picture tube?
A) Positive ray tube
B) Cathode ray tube
C) X-rays tube
D) Millikan tube

602. Which of the following quantum numbers determines the shape of an orbital?
A) Spin
B) Azimuthal
C) Magnetic
D) Principal

603. Which of the following atomic orbitals has highest energy?
A) 2s
B) 1s
C) 3s
D) 4d

604. Which quantum number will be different for the two electrons present in an s-orbital?
A) Principal quantum number
B) Azimuthal quantum number
C) Magnetic quantum number
D) Spin quantum number

605. In nitrogen with electronic configuration $1s^2$, $2s^2$, $2p^3$ the number of unpaired electrons is
A) 0
B) 1
C) 3
D) 5

606. Principle, azimuthal and magnetic quantum numbers are respectively related to
A) Size, shape, and orientation
B) Shape, orientation, and size
C) Size, orientation, and shape
D) Shape, size, and orientation

607. Dalton's law of partial pressure is not obeyed by
A) N_2 and O_2
B) H_2 and O_2
C) NH_3 and HCl
D) H_2 and He

608. How many times is the rate of diffusion of hydrogen faster than that of oxygen
A) 6 times
B) 3 times
C) four times
D) same

609. If a gas at 273 K and 76 cm Hg has a density of 1.98 g dm^{-3} it could be
A) CH_4
B) C_2H_6
C) CO_2
D) Xe

610. Liquefaction of an ideal gas is not possible because
A) It has critical temperature above 0°C
B) Molecules have small size
C) Molecules have extra-large size
D) Negligible intermolecular force

611. Density of a gas is usually expressed in
A) Kg m^{-3}
B) Kg dm^{-3}
C) g dm^{-3}
D) g cm^{-3}

612. The SI units for Van der Waal constant "a" is
A) P atm^5 mol^{-2}
B) P atm^6 mol^{-1}
C) P atm^6 mol^{-3}
D) P atm^6 mol^{-2}

613. The Chromatography in which the mobile phase is a gas is called?
A) Absorption
B) Partition
C) Gas
D) Ion exchange

614. In paper chromatography if the paper is dipped in a pool at the bottom of the container it is called?
A) Liquid solid chromatography
B) Liquid gas chromatography
C) Descending paper chromatography
D) Ascending paper chromatography

615. In paper chromatography retardation factor (Rf) value cannot be more than
A) 0
B) 0.1
C) 1

D) 0.5

616. Gas chromatography can only be used for mixtures which are
A) Volatile or thermally unstable
B) Volatile or thermally stable
C) Non-volatile or thermally stable
D) Non-volatile or thermally unstable

617. The term "chromatography" came from "chroma" and "graphy" which mean
A) Color writing
B) Colorless
C) Color forming
D) Color spreading

618. Which of the following gases has lowest density at STP?
A) N_2
B) CO
C) Ne
D) He

619. Kinetic molecular theory of gases was given by
A) Bernoulli
B) Clausius
C) Maxwell & Boltzmann
D) All

620. The cooling process based on Joule-Thomson effect is
A) Exothermic
B) Endothermic
C) Both
D) None

621. Plasma is the fourth state of visible matter which constitutes universe nearly
A) 50%
B) 25%
C) 75%
D) 99%

622. Which of the following compound absorb radiation appreciably below 200 nm?
A) $CH_2 = CH_2$
B) $CH_2 = CH - CH = CH - CH = CH_2$
C) $CH_2 = CH - CH = CH_2$
D) Both a & b)

623. How do small molecules pass through the outer membrane of mitochondria
A) ATP pump
B) Carrier protein
C) Channels
D) Porins

624. Breakdown of Liver glycogen is triggered by
A) insulin
B) glucagon
C) adrenaline
D) both (B) and (C)

625. Complete oxidation of one gram of carbohydrates yields energy
A) 4 kcal

B) 8 kcal
C) 16 kcal
D) 24 kcal

626. Experimentally Nucleic acids can be analyzed by studying
A) molecular weight
B) absorption of visible light
C) absorption of UV light
D) none of these

627. Thymidine
A) can participate in hydrophobic interactions due to its methyl group
B) is replaced by uracil in RNA
C) normally forms two hydrogen bonds with adenosine
D) all the above

628. RNA and DNA contains sugars respectively
A) deoxyribose, ribose
B) ribose, deoxyribose
C) ribose, phosphate
D) ribose, uracil

629. Nucleoside is a purine or pyrimidine base is
A) covalently bonded to a sugar
B) ionically bonded to a sugar
C) hydrogen bonded to a sugar
D) none of the above

630. Fragments that will move fast in gel electrophoresis are
A) Large fragments
B) Small fragments
C) Large genome
D) None of these

631. Cholesterol is the precursor of
A) steroid hormones
B) vitamin D
C) bile salts
D) both (A) and (C)

632. In the regulation of fatty acid synthesis, the key enzyme is
A) acetyl CoA carboxylase
B) AMP activated protein kinase
C) protein phosphatase
D) none of these

633. How many double bonds are present in arachidonic acid
A) 3 double bonds
B) 2 double bonds
C) 4 double bonds
D) 8 double bonds

634. Triacylglycerols are
A) soluble in water
B) insoluble in water
C) soluble in water at elevated temperature
D) partially soluble in water

635. Animals are unable to convert fatty acids into glucose since
A) acetyl CoA cannot be converted to pyruvate
B) absence of malate synthase
C) absence of dehydrogenase
D) absence of a-ketoglutarate dehydrogenase

636. Fatty acid breakdown in eukaryotes takes place in
A) mitochondrial matrix
B) Cytosol
C) cell membrane
D) endoplasmic reticulum

637. Phospholipids accompany
A) hydrophilic heads and hydrophobic tails
B) long water-soluble carbon chains
C) positively charged functional groups
D) both (B) and (C)

638. Fatty acids are broken down in eukaryotic cells in
A) mitochondrial matrix
B) cell membrane
C) Cytosol
D) endoplasmic reticulum

639. Fertility of soil can be enhanced by
A) Rotation of the crops
B) Adding lime to the acid salts
C) Adding manure and growing legumes
D) All

640. Which is first stable product of nitrogen fixation
A) N_2
B) NH_3
C) NH_4^+
D) NO_3-

641. The single nutrient that provides NPK fertilizer is
A) Straight
B) Compound
C) both a and b
D) none of the above

642. Which of following is a macronutrient
A) Cu
B) Cl
C) H
D) Zn

643. When urea is added to the soil, reaction takes place is
A) **endothermic**
B) exothermic
C) both a and b
D) no heat energy is involved

644. For ammonia synthesis most, suitable catalyst is
A) Pt
B) $ZnO + Cr_2O_3$
C) Fe in fused mixture of $Al_2O_3 + SiO_2 + MgO$
D) All of the above

645. Molten urea is cooled by counter air flow in the tower by the process known as
A) Prilling
B) Evaporation
C) Condensation
D) Crystallization

646. paddy rice are not suitable fields for fertilizer that is
A) Urea
B) DAP
C) Ammonium sulphate
D) NH_4NO_3

647. Calcareous material among the following is
A) limestone
B) marble
C) Chalk
D) All

648. Na_2CO_3 has Enthalpy of 10%w/w solution
A) -102 kj/mole
B) -193 kj/mole
C) -29.1 kj/mole
D) -290 kj/mole

649. Bomb calorimeter measures heat of reaction at
A) Constant volume
B) constant pressure
C) both
D) None of them

650. A calorimeter measures
A) Heat of reaction
B) Heat of combustion
C) Heat of formation
D) Heat of vaporization

651. Hess's law cannot be used to measure
A) Heat of combustion
B) enthalpy charge
C) heat of dissolution
D) internal energy

652. Hess's law is just as the
A) Law of transformation
B) Law of heat exchange
C) Law of heat summation
D) Law of constant composition

653. Reaction that never stops and move in both directions is
A) Reversible reaction
B) Irreversible reaction
C) Equilibrium reaction
D) none of the above

654. $PCl_5 \rightarrow PCl_3 + Cl_2$ here dissociation of phosphorus pentachloride is
A) Reversible reaction
B) **irreversible reaction**
C) incomplete reaction
D) Uni directional

655. As the reaction proceeds the rate of reaction
A) Decreases
B) increases
C) remains constant
D) decreases as well increases

656. Bidirectional reaction is also known as
A) Reversible reaction
B) exothermic reaction
C) endothermic react
D) Irreversible reaction

657. Reversible reactions proceed in
A) Forward direction
B) Backward direction
C) both directions
D) none of the direction

658. Reaction which continues only in one direction up to completion is
A) Equilibrium reaction
B) reversible reaction
C) irreversible
D) bidirectional

659. When equilibrium is established the concentration of reactants and products becomes
A) Constant
B) different
C) zero
D) same

660. Equilibrium can be expressed most accurately by saying that
A) Temperature of opposing reactions is equal
B) Rates of opposing reactions becomes equal
C) Opposing reactions ceases
D) Come of reactants is products are equal

661. Heat energy change at constant temperature and constant pressure is known as
A) Enthalpy change
B) heat of sublimation
C) bond energy
D) internal energy changes

662. Relationship between the entities, H, P, E & V is
A) E=H+PV
B) E=H-P
C) H=E+PV
D) H=E-PV

663. Symbol by which standard heat of formation is expressed
A) ΔH_f
B) $\mathbf{\Delta H_f^0}$
C) ΔH
D) ΔE

664. What is the standard heat of formation of all elements
A) Zero
B) positive
C) negative
D) normal

665. Temperature at which standard enthalpies are taken is
A) 273 K
B) 373 K
C) 298 K
D) 290 K

666. Enthalpy of a system is representing its
A) Heat content
B) energy state
C) reaction rate
D) activation energy

667. ΔH^{o} is measured at the temperature
A) $0^{\circ}C$
B) $25^{\circ}C$
C) $100^{\circ}C$
D) $150^{\circ}C$

668. The enthalpy of formation of carbon dioxide at 298.15K is
A) -110.53 KJ/mol
B) -282.98 KJ/mole
C) -393.15 Kj/mole
D) 110.53 KJ/mole

669. Heat of formation is positive for
A) NH_3
B) CO_2
C) NO
D) H_2O

670. Negative values for enthalpy change are for the process of
A) Neutralization
B) Sublimation
C) Atomization
D) All of the above

671. ΔH^{o}_{f} MgO formation is
A) -300 kj/mole
B) -350 kj/mole
C) -602 kj/mole
D) -450 kj/mole

672. ΔH^{o}_{f} for CO_2 is
A) -300.4 kj/mole
B) -393.7 kj/mole
C) -432.4 kj/mole
D) -473.9 kj /mole

673. Useful method for rate determination for rate of reactions which involves volume changes is
A) Spectrometry
B) Conductometry
C) Dilatometric method
D) Refractometric method

674. Maximum energy is exhibited by
A) Reactants
B) Products
C) Transition state
D) Catalyst

675. To maintain the pH of blood 7.4 what ratio between H_2CO_3 and $NaHCO_3$ is required
A) 1: 10
B) 1: 20
C) 1: 25
D) 1: 30

676. Opposite to the osmosis is?
A) Diffusion
B) Effusion
C) Occlusion
D) Coagulation

677. Solutions are of type
A) Isotonic solution
B) Hypotonic solutions
C) Hypertonic solution
D) All of these

678. Carrier protein can
A) Transport only one substance
B) Transport more than one substance
C) Exchange one substance to another
D) Perform all these functions

679. Monosaccharides has the general formula
A) $C_nH_{2n}O_n$
B) $C_{2n}H_2O_n$
C) $C_nH_2O_{2n}$
D) $C_nH_{2n}O_{2n}$

680. Polysaccharides has the general formula
A) $C_6H_{10}O_5)_n$
B) $C_6H_{12}O_5)_n$
C) $C_6H_{10}O_6)_n$
D) $C_6H_{10}O_6)_n$

681. _____ is aldose sugar
A) Glycerose
B) Ribulose
C) Erythrulose
D) Dihydoxyacetone

682. Milk lacks the?
A) Vitamin C
B) Vitamin A
C) Vitamin B2
D) Vitamin K

683. Milk lacks the?
A) Phosphorus
B) Sodium
C) Iron
D) Potassium

684. HDL is synthesized and secreted by?
A) Pancreas
B) Liver
C) Kidney

D) Muscle

685. Membrane lipid bilayer performs following processes rapidly except
A) Flexing of fatty acyl chains
B) Lateral diffusion of phospholipids
C) Trans bilayer diffusion of phospholipids
D) Rotation of phospholipids around their long axes

686. In the cell the heaviest particulate component is?
A) Nucleus
B) Mitochondria
C) Cytoplasm
D) Golgi apparatus

687. In the cytoplasm the largest particulate component is?
A) Lysosomes
B) Mitochondria
C) Golgi apparatus
D) Endoplasmic reticulum

688. Through membrane the exchange of material takes place
A) Only by diffusion
B) Only by active transport
C) Only by pinocytosis
D) All of these

689. Lipid bilayer membrane has phospholipid.
A) Choline phosphoglycerides
B) Ethanolamine phosphoglycerides
C) Inositol phosphoglycerides
D) Serine phosphoglycerides

690. All the following processes occur rapidly in the membrane lipid bilayer except
A) Flexing of fatty acyl chains
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691. In intestinal lumen the surface tension between aqueous medium and fat droplets is suppressed by
A) Bile Salts
B) Bile acids
C) Conc. H_2SO_4
D) Acetic acid

692. Naturally occurring amino acids possesses compounds.
A) Guanidinium ion
B) Indole
C) Imidazole
D) All of these

693. The pH of a solution is dependent on
A) concentration of salt
B) relative concentration of acids and bases
C) dielectric constant of the medium
D) environmental effect

694. Molecular reactions
A) are the reactions of the functional groups

B) are independent of the functional groups
C) require an enzyme in all cases
D) all the above

695. Example of pentose sugar is
A) Dihydroxyacetone
B) Ribulose
C) Erythrose
D) Glucose

696. Sugar of DNA is
A) Xylose
B) Ribose
C) Deoxyribose
D) Ribulose

697. Sugar of RNA is
A) Ribose
B) Deoxyribose
C) Ribulose
D) Erythrose

698. Which of following type of column has the greater efficiency and resolution?
A) Packed
B) Non-packed
C) Capillary
D) Steel

699. "Brock Mann Activity Scale" is used chromatography for the characterization of
A) Mobile phase
B) Stationary phase
C) Gradient elution
D) Isocratic elution

700. Which compound is more polar in thin layer chromatography (TLC)?
A) alumina
B) silica
C) carbon
D) none of these

701. The composition of soap is the sodium or potassium salts of
A) Essential oils
B) Fatty acids
C) Alcohols
D) Carboxylic acids

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A) 1st
B) 2nd
C) 3rd
D) 4th

710. The main advantage of the mass spectrometer detection in GC over the FID is?
A) Sensitivity
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C) Linear range
D) Dynamic range

711. ———— lamp is useful for variable UV wavelengths in HPLC
A) Hydrogen
B) Deuterium
C) Xenon
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712. Retention factor, *k′*, describe
A) Mobile phase velocity
B) Distribution ration of analyte between two phases
C) Stationery phase stability
D) Migration rate of analyte through a chromatographic column

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B) As
C) Zn
D) C

714. when a mixture of NaCl, KCrO4 is heated with conc. H2SO4 orange red vapours are formed, then compound formed is:
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B) Chromyl chloride
C) Chlorine dioxide
D) Chromic acid

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A) Ferrous nitrite
B) Ferrous nitrate
C) $FeSO_4$. NO
D) $FeSO_4$. NO_2

716. Which of the following compounds turns black with NH_4OH
A) Lead chloride

B) Mercurous chloride
C) Mercuric chloride
D) Calcium chloride

717. Pphenolphthalein is not act as indicator for titration etween
A) HCl and NH4OH
B) KOH and H_2SO_4
C) NaOH and acetic acid
D) $Ca(OH)_2$ and HCl

718. Phenolphthalein is a good indicator for titrating
A) NaOH against oxalic acid
B) Ferrous sulphate against $KMnO_4$
C) NaOH against H_2SO_4
D) None of these

719. 100 ml of N/10 NaOH solution is mixed with 100 ml of N/5 HCl solution and the whole volume is made to 1L, the pH of the resulting solution will be:
A) 2
B) 3
C) 4
D) None of these

720. Pb_3O_4 is regarded as mixed oxide of PbO and PbO_2 . How many parts of PbO_2 are present in it?
A) 33.3%
B) 10%
C) 5%
D) 25%

721. IR band at near 3000cm^{-1} is due to
A) C-C swaying
B) C-H swaying
C) C=O swaying
D) All

722. In IR spectra below 1500cm^{-1} is
A) Area of C-H swaying
B) the area of C=O swaying
C) Fingerprint area
D) Functional group region

723. What is the Normality of 1M H3PO4 solution?
A) 0.5N
B) 1N
C) 2N
D) 3N

724. The normality of a solution containing 4 g NaOH in 10 ml solution
A) 10 N
B) 1.0 N
C) 9.8 N
D) 11.0 N

725. Gram equivalent of a solute dissolved per dm^{-3} of solution is called
A) Molarity
B) Normality
C) Molality
D) Mole fraction

726. The mole fraction of any component of solution is always
A) Less than unity
B) More than unity
C) Equal to unity
D) Zero

727. In 1 molal solution of ethyl alcohol in water, the mole fraction of C_2H_5OH
A) 0.1
B) 0.9
C) 0.55
D) 1.0

728. Hydrolysis of Na_2CO_3 yield the solution
A) Acidic
B) Basic
C) Both acidic and basic
D) Neither acidic nor basic

729. The mole fraction of solute in one molal aqueous solution?
A) 1
B) 0.081
C) 1.8
D) 18

730. What will be the molality of solution of glucose in water which is 10% w/w?
A) 0.01
B) 0.617
C) 0.668
D) 1.62

731. It is preferred to deal with Molality instead of normality because
A) It is easy to make calculation
B) Weights are involved
C) Molality does not depend on temperature
D) Normality depends upon temperature

732. The molality of 40% aqueous solution of NaOH will be
A) 2.8M
B) 1.25M
C) 10.5 M
D) 16.67M

733. Water is known as universal solvent due to
A) High dielectric constant
B) Strong intermolecular forces
C) It is liquid in nature
D) Large quantity in nature

734. Addition of a substance to water followed by breaking of any O-H bond is known as
A) Hydration
B) Hydrolysis
C) Solvation
D) Hydrogenation

735. When180g glucose is added to 1000 g of water, the solution formed is
A) 1.0 molal
B) 1.2 molal
C) 1.5 molal
D) 2.0 molal

736. If we desire to make 1 molal sucrose solution, how much sucrose will be added to 1000 g of water?
A) 312 g
B) 320g
C) 340 g
D) 342 g

737. If 180g glucose is added to 1000g H_2O resulting solution is 1molal. Mass of solution becomes
A) 100g
B) 80 g
C) 180 g
D) 180g

738. When 5g of toluene is added to 255 g of benzene resulting solution has molality?
A) 0.12 mol/Kg
B) 0.117 mol/Kg
C) 0.21 mol/ Kg
D) 0.34 mol/ Kg

739. The molality of 2% W/W sodium chloride solution is?
A) 0.02 molal
B) 0.35 molal

C) 0.25 molal
D) 0.45 molal

740. 1 molal aqueous solution of sucrose has mole fraction?
A) 0.018
B) 0.18
C) 0.012
D) 0.23

741. Dissolved oxygen in sea water is $5.65x10^{-3}$g per Kg. What will be the concentration of O2 in parts per million?
A) 4
B) 8
C) 3
D) 5

742. Solution of solid in gas?
A) Fog
B) Cheese
C) Dust in smoke
D) Opals

743. Solution of liquid in gas is
A) CO_2 in H_2O
B) Mist
C) Jellies
D) Milk

744. What is the upper Consolute temperature of phenol water system
A) 67.5 ºC
b)7.2 ºC
C) 90 ºC
D)100 ºC

745. What is the commercial method of preparation of phenol?
A) Dows process
B) From diazonium salt
C) Hock method
D) By decarboxylation of salicylic acid

746. When phenol water system becomes a homogenous mixture the percentage is
A) 55 to 50%
B) 60 to 10%
C) 75 to 30%
D) 70 to 10%

747. Reaction of aqueous NaOH on chlorobenzene gives whichof the following products?
A) o-chlorobenzene
B) o-chlorophenol
C) phenol
D) no reaction

748. An example of sigma bonded orgnometallic compound is
A. Grignard reagent
B. Ferrocene
C. cobolatocene
D. ruthenocene

749. Which of the following titrations will have the equivalence point at a pH more than 8?

A. HCl and NH3
B. CH3COOH and NH3

C. HCl and NaOH

D. CH3COOH and NaOH

750 Which of the following compound does not form complex with EDTA?

A. Ca

B. **Be**

C. Mg

D. Sr

751. Which of the following is a buffer solution?

A. H2SO4 + CuSO4

B. CH3COOH + CH3COONH4

C. NaCl + NaOH

D. CH3COONa + CH3COOH

752. If an object is present at a distance of 5 km from the surface of the earth, it is present in

A. Troposphere

B. Thermosphere

C. Mesosphere

D. Stratosphere

753. The equipment to measure atmospheric humidity is

A. Anemometer

B. hygrometer

C. Hydrometer

D. Lysimeter

754. What is the maximum number of electrons, which can have following quantum numbers, n = 3, l = 1, m = -1?

A. 2

B. 6

C. 10

D. 4

755. Which ion is kinetically inert?

A. Cr2+

B. Co3+

C. Co2+

D. Fe3+

756. Iron Carbonyl, $Fe(CO)_5$ is

A. Mononuclear

B. Tetranuclear

C. Dinuclear

D. Trinuclear

757. A chealating agent has two or more than two donor atoms to bind to a single atom ion. Which of the following agent is not chelating agent?

A. Ethane diamine

B. Glycinato

C. Oxalato

D. thiosulphato

758. Dissolving a solute in a solvent does not change its

A. Specific heat

B. Vapor pressure

C. Viscosity

D. None of these

759. Applicability of Clausius-Clapeyron Equation is subject to the condition that the

A. Vapor follows ideal gas law

B. Volume in the liquid state is negligible

C. Both

D. Neither (a) nor (b)

760. Slow plastic deformation of metals under a constant stress is known as

A. Fatigue

B. Proof deformation
C. Gradual deformation
D. Creep

761. Which of the following is present in the powder of acrylic resin.

A. Methylmeth acrylate
B. benzylperoxide
C. none
D. All of the above

762. Which one of the following is most elastic?

A. Titanium
B. Cobalt
C. Chrome-cobalt-nickel
D. Nickel-titanium

763. Process in which some minerals are converted to the oxide by heating in the air at a temperature below their melting point is called

A. Roasting
B. Smelting
C. Bessemerization
D. Concentration

764. Metallic compounds that occur naturally are called

A. Metal oxides
B. Minerals
C. Ores
D. None of above

765. The Hall-Heroult process is used in the production of:

A. Mg
B. Fe
C. Al
D. Au

766. Which One of the Following Is Not a Greenhouse Gas?

A. Methane

B. Hydrogen

C. Nitrous oxide

D. Ozone

767. What is the ideal temperature of greenhouse effect

A. 70 ℃

B. 50 ℃

C. 180 ℃

D. **80-85 ℃**

768. Which One of the Following Is Incorrect About the Greenhouse Effect?

A. Life on earth is possible due to greenhouse effect

B. Greenhouse effect is a natural process that maintains earth's temperature

C. More is the emission of greenhouse gases, more is the temperature of the earth's atmosphere

D. Increased emission of greenhouse gases is a natural process

769. Which of the Following Greenhouse Gases Has the Highest Atmospheric Lifetime?

A. CFC

B. Nitrous oxide

C. Methane

D. Carbon tetrafluoride

770. What is Carbon Sequestration?

A. Removal of CO2 from the atmosphere

B. Storage of CO2 by depositing in reservoir

C. **Removal of CO2 from the atmosphere & storing it by depositing in reservoir**

D. None of the above

771. What is the surface temperature of earth in Calsius?

A. 14 ° C

B. 13.9 ° C

C. 10 °C

D. 20 °C

772. When did greenhouse effect discovered?

A. 1814

B. 1824

C. **1859**

D. 1884

773. Which is true about different forms of hydrogen?

A. Ortho hydrogen has same spins of two nuclei clockwise or anticlockwise

B. Para hydrogen has different spins of two nuclei

C. At absolute zero temperature, there is a 100% para form and 75% ortho form

D. All are correct

774. Alcohol contains_____ hydrogen bonds.

A. Intramolecular,

B. Intermolecular,

C. both

D. none

775. Red ink is prepared from

A. Phenol

B. Aniline

C. Congo red

D. Eosin

776. ------ is a systematic way to examine how much time is spent in different parts of programm

A. monetering

B. **profilling**

C. logging

D. debugging

777. For the application of basic dyes on cotton process is essential

A. Successor process

B. Mordanting

C. coupling

D. wetting

778. An example for water insoluble dye

A. reactive

B. Vat

C. Cupric acid

D. None of them

779. Chose the indicator for Cu-EDTA titration.

A. Thymol blue

B. Phenolphthalein

C. Murexide

D. None of them

780. For gold plating which electrolyte is used.

A. Nitrate based

B. Sulphate based

C. Nickle based

D. None of them

781.Cork screw waves are produced by rearranging threads of a regular____ waves?

A. Twill

B. Mat

C. Rib

D. None of them

782. How does the hot water or steam escape through earth surface?

A. Through fissures

B. Through Pot holes

C. From Wells

D. Through water bodies

783. Which of the following statements is true for hydrothermal methods?

A. It uses temperature above its cooling point

B. It uses temperature below its cooling point

C. It uses temperature above its boiling point

D. It is not at all related with the temperature

784. Which one of the following is high pressure polymorphs of SiO2?

A. Wurtzite

B. Phenacite

C. Quartz

D. Stishovite

785. the least size of ordinary honey comb weave is on ____ threads.

A. 4

B. 3

C. 6

D. 8

786. Which of the fluid has highest viscosity?

A. Honey

B. water

C. blood

D. none

787. Average RBC count in an adult male is

A. 4.5 million/mm3

B. 5 million/mm3

C. 5.5 million/mm3

D. 6 million/mm3

788. Which of the following represent kinematic viscosity?

A. Viscosity/Temperature

B. Viscosity/area

C. Viscosity/density

D. Viscosity/mass

789. Each colloid particle has a definite charge, it may be cation or anion so fixed layer constitute by

A. Single charged layer
B. **Double opposite charged layer**
C. Mobile and immobile layer
D. None of the abov

790. On the basis of the state of the dispersion medium colloids are

A. Sol and gel type
B. Lyophillic and lyophobic type
C. saturated and unsaturated type
D. None of the above

791. Following are the blood buffers except

A. haemoglobin
B. phosphate
C. plasma proteins
D. bicarbonate

792. The normal stored form of iron in liver and spleen is

A. Transferrin
B. Apo ferritin
C. Ferritin
D. Hemosiderin

793. Which of the following solutions contains the greatest amount of solute?

A. 30.0 cm3 of 0.30 mol dm−3 NaCl
B. 10.0 cm3 of 0.50 mol dm−3 NaCl
C. 20.0 cm3 of 0.40 mol dm−3 NaCl

D. 40.0 cm3 of 0.20 mol dm−3 NaCl

794. 50 mL of 0.02 M NaOH is added to 50 mL of 0.04 M HCl solution. The pH of the resulting solution will be...

A. 7

B. 2

C. 1.7

D. 1

795. H2S will precipitate the sulphides of all the metals from the solution of chlorides of Cu, Zn and Cd, if

The solution is aqueous

The solution is acidic

The solution is dilute acidic

Any of these solutions is present

796. Which reagent below would enable you to remove sulphate ions from a solution containing both sulphate and chloride ions

A. Sodium hydroxide

B. Barium hydroxide

C. Barium sulphate

D. Potassium hydroxide

797. The ion that cannot be precipitated by both HCl and H2S is

A. Pb2+

B. Cu+

C. Ag+

D. Sn2+

798. To an inorganic mixture dil. H2SO4 is added in cold; colourless, odourless gas is evolved. The

mixture contains

A. Sulphite

B. Acetate

C. Nitrite

799. Which of these non-metals is commonly used in fire-crackers?

A. Silicon

B. Neon

C. Sulphur

D. Fluorine

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C) NaOH against H_2SO_4
D) None of these

719. 100 ml of N/10 NaOH solution is mixed with 100 ml of N/5 HCl solution and the whole volume is made to 1L, the pH of the resulting solution will be:
A) 2
B) 3
C) 4
D) None of these

720. Pb_3O_4 is regarded as mixed oxide of PbO and PbO_2. How many parts of PbO_2 are present in it?
A) 33.3%
B) 10%
C) 5%
D) 25%

721. IR band at near 3000cm^{-1} is due to
A) C-C swaying
B) C-H swaying
C) C=O swaying
D) All

722. In IR spectra below 1500cm^{-1} is
A) Area of C-H swaying
B) the area of C=O swaying
C) Fingerprint area
D) Functional group region

723. What is the Normality of 1M H_3PO_4 solution?
A) 0.5N
B) 1N
C) 2N
D) 3N

724. The normality of a solution containing 4 g NaOH in 10 ml solution
A) 10 N
B) 1.0 N
C) 9.8 N
D) 11.0 N

725. Gram equivalent of a solute dissolved per dm^{-3} of solution is called
A) Molarity
B) Normality
C) Molality
D) Mole fraction

726. The mole fraction of any component of solution is always
A) Less than unity
B) More than unity
C) Equal to unity
D) Zero

727. In 1 molal solution of ethyl alcohol in water, the mole fraction of C_2H_5OH
A) 0.1
B) 0.9
C) 0.55
D) 1.0

728. Hydrolysis of Na_2CO_3 yield the solution
A) Acidic
B) Basic
C) Both acidic and basic
D) Neither acidic nor basic

729. The mole fraction of solute in one molal aqueous solution?
A) 1
B) 0.081
C) 1.8
D) 18

730. What will be the molality of solution of glucose in water which is 10% w/w?
A) 0.01
B) 0.617
C) 0.668
D) 1.62

731. It is preferred to deal with Molality instead of normality because
A) It is easy to make calculation
B) Weights are involved
C) Molality does not depend on temperature
D) Normality depends upon temperature

732. The molality of 40% aqueous solution of NaOH will be
A) 2.8M
B) 1.25M
C) 10.5 M
D) 16.67M

733. Water is known as universal solvent due to
A) High dielectric constant
B) Strong intermolecular forces
C) It is liquid in nature
D) Large quantity in nature

734. Addition of a substance to water followed by breaking of any O-H bond is known as
A) Hydration
B) Hydrolysis
C) Solvation
D) Hydrogenation

735. When180g glucose is added to 1000 g of water, the solution formed is
A) 1.0 molal
B) 1.2 molal
C) 1.5 molal
D) 2.0 molal

736. If we desire to make 1 molal sucrose solution, how much sucrose will be added to 1000 g of water?
A) 312 g
B) 320g
C) 340 g
D) 342 g

737. If 180g glucose is added to 1000g H_2O resulting solution is 1molal. Mass of solution becomes
A) 100g
B) 80 g
C) 180 g
D) 180g

738. When 5g of toluene is added to 255 g of benzene resulting solution has molality?
A) 0.12 mol/Kg
B) 0.117 mol/Kg
C) 0.21 mol/ Kg
D) 0.34 mol/ Kg

739. The molality of 2% W/W sodium chloride solution is?
A) 0.02 molal
B) 0.35 molal
C) 0.25 molal
D) 0.45 molal

740. 1 molal aqueous solution of sucrose has mole fraction?
A) 0.018
B) 0.18
C) 0.012
D) 0.23

741. Dissolved oxygen in sea water is $5.65x10^{-3}$g per Kg. What will be the concentration of O2 in parts per million?
A) 4
B) 8
C) 3
D) 5

742. Solution of solid in gas?
A) Fog
B) Cheese
C) Dust in smoke
D) Opals

743. Solution of liquid in gas is
A) CO_2 in H_2O
B) Mist
C) Jellies
D) Milk

744. What is the upper Consolute temperature of phenol water system
A) 67.5 ºC
b)7.2 ºC
C) 90 ºC
D)100 ºC

745. What is the commercial method of preparation of phenol?
A) Dows process

B) From diazonium salt
C) Hock method
D) By decarboxylation of salicylic acid

746. When phenol water system becomes a homogenous mixture the percentage is
A) 55 to 50%
B) 60 to 10%
C) 75 to 30%
D) 70 to 10%

747. Reaction of aqueous NaOH on chlorobenzene gives which of the following products?
A) o-chlorobenzene
B) o-chlorophenol
C) phenol
D) no reaction

748. An example of sigma bonded organometallic compound is
A) Grignard reagent
B) Ferrocene
C) cobaltocene
D) ruthenocene

749. Which of the following titrations will have the equivalence point at a pH more than 8?
A) HCl and NH_3
B) CH_3COOH and NH_3
C) HCl and NaOH
D) CH_3COOH and NaOH

750. Which of the following compound does not form complex with EDTA?
A) Ca
B) **Be**
C) Mg
D) Sr

751. Which of the following is a buffer solution?
A) $H_2SO_4 + CuSO_4$
B) $CH_3COOH + CH_3COONH_4$
C) NaCl + NaOH
D) $CH_3COONa + CH_3COOH$

752. If an object is present at a distance of 5 km from the surface of the earth, it is present in
A) Troposphere
B) Thermosphere
C) Mesosphere
D) Stratosphere

753. The equipment to measure atmospheric humidity is

A) Anemometer
B) hygrometer
C) Hydrometer
D) Lysimeter

754. What is the maximum number of electrons, which can have following quantum numbers, n = 3, l = 1, m = -1?

A) 2
B) 6
C) 10
D) 4

755. Which ion is kinetically inert?

A) Cr^{2+}
B) Co^{3+}
C) Co^{2+}
D) Fe^{3+}

756. Iron Carbonyl, $Fe(CO)_5$ is

A) Mononuclear
B) Tetranuclear
C) Dinuclear
D) Trinuclear

757. A chealating agent has two or more than two donor atoms to bind to a single atom ion. Which of the following agent is not chelating agent?

A) Ethane diamine
B) Glycinato
C) Oxalato
D) thiosulphato

758. Dissolving a solute in a solvent does not change its

A) Specific heat
B) Vapor pressure
C) Viscosity
D) None of these

759. Applicability of Clausius-Clapeyron Equation is subject to the condition that the

A) Vapor follows ideal gas law
B) Volume in the liquid state is negligible
C) Both
D) Neither (a) nor (b)

760. Slow plastic deformation of metals under a constant stress is known as

A) Fatigue

B) Proof deformation

C) Gradual deformation

D) Creep

761. Which of the following is present in the powder of acrylic resin.

A) Methylmeth acrylate

B) benzylperoxide

C) none

D) All of the above

762. Which one of the following is most elastic?

A) Titanium

B) Cobalt

C) Chrome-cobalt-nickel

D) Nickel-titanium

763. Process in which some minerals are converted to the oxide by heating in the air at a temperature below their melting point is called

A) Roasting

B) Smelting

C) Bessemerization

D) Concentration

764. Metallic compounds that occur naturally are called

A) Metal oxides

B) Minerals

C) Ores

D) None of above

765. The Hall-Heroult process is used in the production of:

A) Mg

B) Fe

C) Al

D) Au

766. Which One of the Following Is Not a Greenhouse Gas?

A) Methane

B) Hydrogen

C) Nitrous oxide
D) Ozone

767. What is the ideal temperature of greenhouse effect
A) 70 ℃
B) 50 ℃
C) 180 ℃
D) **80-85 ℃**

768. Which One of the Following Is Incorrect About the Greenhouse Effect?
A) Life on earth is possible due to greenhouse effect
B) Greenhouse effect is a natural process that maintains earth's temperature
C) More is the emission of greenhouse gases, more is the temperature of the earth's atmosphere
D) Increased emission of greenhouse gases is a natural process

769. Which of the Following Greenhouse Gases Has the Highest Atmospheric Lifetime?
A) CFC
B) Nitrous oxide
C) Methane
D) Carbon tetrafluoride

770. What is Carbon Sequestration?
A) Removal of CO_2 from the atmosphere
B) Storage of CO_2 by depositing in reservoir
C) **Removal of CO_2 from the atmosphere & storing it by depositing in reservoir**
D) None of the above

771. What is the surface temperature of earth in Calsius?
A) 14 ° C
B) 13.9 ° C
C) 10 ° C
D) 20 ° C

772. When did greenhouse effect discovered?
A) 1814
B) 1824
C) **1859**
D) 1884

773. Which is true about different forms of hydrogen?

A) Ortho hydrogen has same spins of two nuclei clockwise or anticlockwise
B) Para hydrogen has different spins of two nuclei
C) At absolute zero temperature, there is a 100% para form and 75% ortho form
D) All are correct

774. Alcohol contains_____ hydrogen bonds.

A) Intramolecular,

B) Intermolecular,

C) both

D) none

775. Red ink is prepared from

A) Phenol

B) Aniline

C) Congo red

D) Eosin

776. ------ is a systematic way to examine how much time is spent in different parts of programm

A) monetering

B) **profilling**

C) logging

D) debugging

777. For the application of basic dyes on cotton process is essential

A) Successor process

B) Mordanting

C) coupling

D) wetting

778. An example for water insoluble dye

A) reactive

B) Vat

C) Cupric acid

D) None of them

779. Chose the indicator for Cu-EDTA titration.

A) Thymol blue

B) Phenolphthalein

C) Murexide

D) None of them

780. For gold plating which electrolyte is used.

A) Nitrate based

B) Sulphate based

C) Nickle based

D) None of them

781. Corkscrew waves are produced by rearranging threads of a regular____ waves?

A) Twill

B) Mat

C) Rib

D) None of them

782. How does the hot water or steam escape through earth surface?

A) Through fissures

B) Through Potholes

C) From Wells

D) Through water bodies

783. Which of the following statements is true for hydrothermal methods?

A) It uses temperature above its cooling point

B) It uses temperature below its cooling point

C) It uses temperature above its boiling point

D) It is not at all related with the temperature

784. Which one of the following is high pressure polymorphs of SiO_2?

A) Wurtzite

B) Phenacite

C) Quartz

D) Stishovite

785. The least size of ordinary honeycomb weave is on ____ threads.

A) 4

B) 2x2

C) 6x4

D) 8

786. Which of the fluid has highest viscosity?

A) Honey

B) water

C) blood

D) none

787. Average RBC count in an adult male is

A) 3 million/mm^3

B) 2 million/mm^3

C) 8 million/mm^3

D) 6 million/mm^3

788. Which of the following represent kinematic viscosity?

A) Viscosity/Temperature

B) Viscosity/area

C) **Viscosity/density**

D) Viscosity/mass

789. Each colloid particle has a definite charge; it may be cation or anion so fixed layer constitute by

A) Single charged layer

B) **Double opposite charged layer**

C) Mobile and immobile layer

D) None of the above

790. On the basis of the state of the dispersion medium colloids are

A) **Sol and gel type**

B) Lyophilic and lyophobic type

C) saturated and unsaturated type

D) None of the above

791. Following are the blood buffers except

A) hemoglobin

B) phosphate

C) plasma proteins

D) bicarbonate

792. The normal stored form of iron in liver and spleen is

A) Transferrin

B) Apo ferritin

C) Ferritin

D) Hemosiderin

793. Which of the following solutions contains the greatest amount of solute?

A) 30.0 cm^3 of 0.30 mol dm^{-3} NaCl

B) 10.0 cm^3 of 0.20 mol dm^{-3} NaCl

C) 20.0 cm^3 of 0.40 mol dm^{-3} NaCl

D) 30.0 cm^3 of 0.20 mol dm^{-3} NaCl

794. 50 mL of 0.02 M NaOH is added to 50 mL of 0.04 M HCl solution. The pH of the resulting solution will be.

A) 7

B) 2

C) 1.7

D) 1

795. H_2S will precipitate the sulphides of all the metals from the solution of chlorides of Cu, Zn and Cd, if

A) The solution is aqueous

B) The solution is toxic

C) The solution is old

D) None of these

796. Which reagent below would enable you to remove sulphate ions from a solution containing both sulphate and chloride ions

A) Sodium hydroxide
B) Barium hydroxide
C) Barium sulphate
D) Potassium hydroxide

797. The ion that cannot be precipitated by both HCl and H_2S is

A) Pb^{2+}
B) Cu^{+}
C) Ag^{+}
D) Sn^{2+}

798. To an inorganic mixture dil. H_2SO_4 is added in cold; colourless, odourless gas is evolved. The mixture contains

A) Sulphite radical
B) Acetate
C) Nitrite
D) Carbonate

799. Which of these non-metals is commonly used in firecrackers?

A) Silicon
B) Neon
C) Sulphur
D) Fluorine

800. Mid-IR region ranges from
A) 14000-400cm^{-1}
B) 400-10 cm^{-1}
C) 6000-400 cm^{-1}
D) 4000-400 cm^{-1}
801. Single band near 3000cm^{-1} is a specific band for identification of
A) Alcohols
B) Alkanes
C) Alkenes
D) Amine
802. In the first chromatography experiment by Tswett separated?

A) Xanthophyll
B) Beta carotene
C) Colors
D) Chlorophyll

803. What are the types of electrons involved in electronic excitations
A) n-electrons
B) pi-electrons
C) sigma-electrons
D) All above

804. The lighter source in visible spectrophotometer is
A) Tungsten lamp
B) Mercury
C) Hydrogen gas lamp
D) Deuterium discharge lamp

805. Which of following laboratory material has highest working temperature
A) Borosilicate
B) Quartz glass
C) Fused silica
D) Platinum

806. Which radiations are due to vibrational changes
A) UV
B) Visible
C) Infrared
D) Microwave

807. Electromagnetic radiation with maximum wavelength is
A) X-rays
B) Gamma rays
C) Radio waves
D) none

808. _____ is / are allowed transitions?
A) π- π^*
B) σ- σ^*
C) π-σ^*
D) A and B

809. Which radiations are known as inner shell radiations?
A) UV
B) Visible
C) Infrared
D) X-rays

810. The electron rearrangements occur so rapidly that nuclei can be considered as stationary until the rearrangement is complete.
A) Beer-Lamberts law
B) Maxwell Principal
C) Faraday Principal
D) Frank Condon Principal

811. Sugar juice can be purified by?

A) **Animal charcoal**

B) Tar coal

C) charcoal

D) none

812. In steam distillation, the vapor pressure of volatile organic compound is

A) **less than atmospheric pressure**

B) Equal to atmospheric pressure.

C) More than atmospheric pressure

D) None of these

813. Hexane and acetone present in mixture can be purified or separated by

A) Steam distillation

B) Hydro distillation

C) Vacuum distillation

D) **Fractional distillation**

814. An organic compound present in water can be easily separated by

A) Evaporation

B) **Adsorption**

C) Distillation

D) Steam distillation

815. Fractional distillation is useful to separate liquids with a difference in their boiling point at least of

A) (a)5 °C

B) (b)25°C

C) (c)30 °C

D) (d)15 °C

816. Two liquids can be separated by steam distillation is difference in their boiling points is more than

A) 20 °C

B) 10 °C

C) **30 °C**

D) 2 °C

817. Which compounds can be separated by chromatography?

A) Amino acids

B) peptides

C) Steroids

D) **All of these.**

818. Non-volatiles cannot be separated and analyzed using

A) HPLC

B) **GC**

C) Ion-exchange

D) Column chromatography

819. Halogen can be estimated by

A) Duma's method.

B) **Carius method**

C) Leibig's method

D) All of the above

820. Nitrogen in organic compounds can be analyzed by

A) **Duma's method**

B) Carius method

C) Beibigs method

D) None of these.

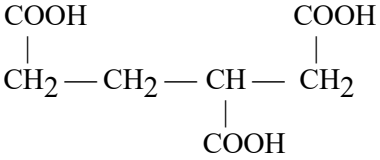
821. IUPAC name of compound $C{=}C-C-C{\equiv}C$

A) **1-pentene-4-yne**

B) 4-pentene-1-yne

C) Pent-1-en-4-yne

D) Pent-4-en-1-yne

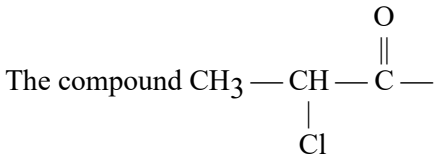
822.  Suggest names for structure:

A) Butane-1,2,4-tricarboxylic acid

B) Hexane trioic acid

C) 3-carboxy hexane-1,6-dioic acid

D) A and C

823. The compound  has IUPAC name

A) **2-chloropropanoyl chloride**

B) 1,2-dichloropropanone

C) Chloroformyl chloroetnane

D) 1,2-dichloropropanal

824. The compound $C_2H_5OCH_2CH_2CH_2CH_2OCH_3$ IUPAC name is

A) Ethoxy butane oxymethane

B) 2,6-dioxy heptane

C) **1-ethoxy,4-methoxy butane**

D) 1-methoxy,3-ethoxy butane

825. The name of $CH_3 — CH = CH = CHO$ the compound is

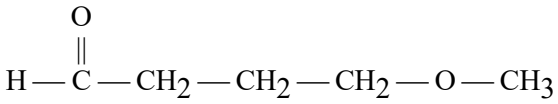
A) Prop-2-ene-1-al

B) **Crotonaldehyde**

C) Butenal

D) Butene-1-al

826. The following compound has IUPAC name



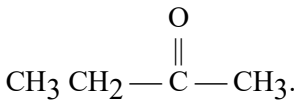
A) 2-formyl methoxy propane

B) 2-methoxy butanal

C) Methoxy butanal

D) **4-methoxy butanal**

827. The IUPAC name of compound

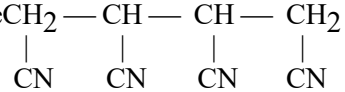


A) 2-Butanone

B) 3-Butanone

C) 2-Butane

D) None

828. The following compounds has IUPAC name 

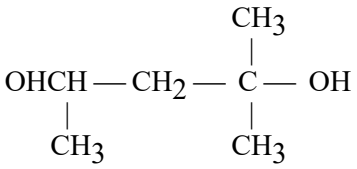
A) 1,2,3,4-cyano butane

B) 1,2,3,4-tetracyano butane

C) 3,4-dicyanohexane-1,t-dinitrile

D) None of these

829. IUPAC name of



A) 3-methyl butanol

B) 4-methyl-2,4-pentanediol

C) **2-methyl-2,4-pentanediol**

D) None of these

830. Acraldehyde has IUPAC name

A) Propenal

B) Butanal

C) **Prop-2-en-1-al**

D) None of these

831 A neutral molecule having the general formula AB3 has two unshared pair of electrons on A. What is the hybridization of A?

A) sp

B) sp2

C) sp3

D) sp3d

832. A π (pi) bond is the result of the

(a) overlap of two s orbitals.

(b) overlap of an s and a p orbital.

(c) overlap of two p orbitals along their axes.

(d) sidewise overlap of two parallel p orbitals.

833. A triple bond contains ___ sigma bond(s) and ___ pi bond(s).

A) 0, 3

B) 3, 0

C) 2, 1

D) 1, 2

834. Among the following, the linear molecule is

A) **CO_2**

B) NO_2

C) SO_2

D) ClO_2

835. Two optical isomers are formed from carbon atoms that is bonded to how many different groups:

A) 1

B) 2

C) 3

D) 4

836. There is a difference in effect of optical isomer on

A) heat

B) temperature

C) **plane polarized light**

D) pressure

837. Types of stereoisomerism are:

A) cis-isomerism

B) optical isomerism

C) cis-trans isomerism

D) B and C

838. Compounds which have different arrangements of atoms in space while having same atoms bonded to each other are said to have

A) position isomerism

B) functional group isomerism

C) chain isomerism

D) stereoisomerism

839. Types of structural isomerism are

A) position isomerism

B) (b)functional group isomerism

C) chain isomerism

D) all of them

840. Compounds which have same molecular formula but different structural formula is called

A) **structural isomer**

B) molecular isomer

C) optical isomer

D) position isomer

841. When one hydrogen atom of alkane is removed then it is called

A) Alkene

B) Alkyl

C) Aldehyde

D) Saturated hydrocarbon

842. Alkanes are also known as

A) Supersaturated hydrocarbon

B) Unsaturated hydrocarbon

C) **Paraffins**

D) Both a & c

843. Sabatier Senderns reaction involve _____ in presence of Ni

A) **Alkene and H_2**

B) Alkene and O_2

C) Alkene and N_2

D) Alkyne and Cl_2

844. Hydrogenolysis results in the formation of

A) **Alkane**

B) Alkene

C) Alkyne

D) Aldehyde

845. Clemmensens reduction involves the reduction of

A) **Ketone**

B) Alkane

C) none

D) all of above

846. Soda lime is a mixture of

A) CaO and NaOH

B) NaOH and Na2O

C) Na2O and KOH

D) none

847. Removal of CO_2 is called

(a) Carboxylation

(b) Decarboxylation

(c) Esterification

(d) Hydroxylation

848. Molozonide is unstable and changes into ozonide on

A) Reduction

B) Oxidation

C) Hydrolysis

D) Rearrangement

849. Due to presence of double bond alkenes are

A) **Unsaturated**

B) Saturated

C) Polar

D) non-polar

850. R-Mg-Br is called

A) Grignard reagent

B) Metallic alkyl halide

C) Both a & b

D) Alkyl

851. In Friedel Craft reaction, AlCl3 is used to give

A) Weak nucleophile

B) **Strong electrophile**

C) Strong nucleophile

D) none

852. Benzene ring is activated by

A) Ortho directors

B) **Ortho and para directors**

C) Ortho and meta directors

D) Meta directors

853. Oxidation of benzoic acid with acidified $KMnO_4$ or $K_2Cr_2O_7$ produces

(a) n-propyl benzene

(b) tolunene

(c) ethyl benzene

(d) All

854. Which is a meta directing?

A) C_2H_5

B) NHR_2

C) **COOH**

D) RBr

855. Which one is the molecular formula of benzal chloride

(a) $C_6H_5CH_2Cl$

(b) $C_6H_5CH{=}CHCl$

(c) $C_6H_5CHCl_2$

(d) None

856. Ortho and para directing group is

A) COOR

B) COR

C) CHO

D) I

857. Benzenetrizonide hydrolysis yields three moles of?

(a) Glyoxal

(b) Gluoxime

(c) Glycol

(d) Benzaldehyde

858. Organic Compounds are most likely to

A) Not burn in air

B) Contain covalent bonds

C) Soluble in water

D) High melting points

859. Benzene ozonlysis produces

(a) Vicinal diol

(b) Glycol

(c) Glyoxal

(d) Both b & c

860. The propane combustion products are?

A) $4CO + 4H_2O$

B) $3CO_2 + 4H_2O$

C) $3CO + 4H_2O$

D) $2CO + 4H_2O$

861 Ethanol can be converted into ethanoic acid by

A) Hydrogenation

B) Hydration

C) **Oxidation**

D) Fermentation

862. Methyl alcohol is not used

A) As a solvent

B) As an antifreezing agent

C) **As a substitute for petrol**

D) For denaturing of ethyl alcohol

863. Methanol can be obtained from

A) water gas

B) destructive distillation of wood

C) methane

D) all

864 An alcohol which can be prepared by fermentation is

a. CH3OH

b. C3H7OH

c. **CH3 - CH2 - OH**

d. C6H5OH

865. Phenol was isolated by Runge from

A) vegetable oil

B) coaltar

C) wood

D) none of these

866. Which one of the following compounds does not have - OH group

A) ethylene glycol

B) glycerol

C) picric acid

D) ethyl acetate

867. The hydrogenation of phenol in the presence of Ni and heat gives

A) cyclohexane

B) n - hexane

C) 1 - hexanol

D) cyclohexanol

868 Ethanol and methanol can be distinguished by a

A) **Iodoform test**

B) Luca's test

C) Benedict's test

D) Tollens test

869. Which one of the following alcohols has greater boiling point

A) ethanol

B) ethylene glaycol

C) **glycerol**

D) methanol

870 The distinguish among primary, secondary and tertiary alcohols, one would use the following experimental method

A) Sandmeyer reaction

B) Witting reaction

C) Ninhydrin test

D) Luca's test

871. Which of the following reagents may be used to distinguish between phenol and benzoic acid?

A) **Neutral $FeCl_3$**

B) Aqueous naOH

C) Tollen's reagent

D) Molisch reagent

872. The conversion of m-nitrophenol to resorcinol involves respectively

A) Diazotization, reduction and hydrolysis

B) Hydrolysis, diazotization and reduction

C) Reduction, diazotization and hydrolysis

D) Hydrolysis, reduction and diazotization

873. Which compound is also known by the name of carbolic acid?

A) C_2H_2OH

B) H_2CO_3

C) **C_6H_5OH**

D) H_3PO_3

874. The given dissociation constant (Ka) value $1.3x10^{-10}$ is of

(a) Alcohol (b) Acetic acid

(c) Water **(d) Phenol**

875. Heating phenol with Zn will yield

A) **Benzene**

B) Benzoic acid

C) Phenoxide

D) Cyclohexane

876. Treating phenol with formaldehyde in the presence of dilute base forms Bakelite. The process involved is

A) Oxidation

B) Elimination

C) **Condensation polymerization**

D) Additional polymertization

877. Phenol was isolated by Runge from

A) Vegetable oil

B) Coaltar

C) Wood

D) None of these

878. The hydrogenation of phenol in the presence of Ni and heat gives

A) Cyclohexane

B) n-Hexane

C) 1-Hexanol

D) Cyclohexanol

879. Phenol is readily soluble in

A) Water

B) **Organic solvents**

C) Inorganic solvents

D) All of these

880. o-Nitrophenol is

A) Volatile

B) **Steam volatile**

C) Non-volatile

D) Non of these

881. Organic compound which contains halogens is

A) polyvinyl chloride
B) poly chloro ethene
C) both of them
D) none

882. Flow of water from upper to lower place is

A) Nonspontaneous
B) Endothermic process
C) Spontaneous process
D) Exothermic process

883. 1 caloric is equal to

A) 4.18 KJ
B) 3.18 KJ
C) 4.54 KJ
D) 3.60 KJ

884. Chlorobenzene is prepared commercially by

A) Dow's process
B) Deacon's process
C) **Raschig process**
D) Etard's process

885. Aryl halides are less reactive towards nucleophilic substitution reaction as compared to alkyl halides due to

A) The formation of less stable carbonium ion
B) Resonance stabilization of aryl halide
C) Longer–carbon–halogen bond
D) none

886. Which of the following factors does not favour SN1 mechanism?

A) **Strong nucleophile**
B) Polar solvent
C) Low concentration of nucleophile
D) alkyl halide

887. Which of the following is the correct order of decreasing reactivity towards nucleophilic substitution?

A) Vinyl chloride > Allyl chloride > Propyl chloride
B) Propyl chloride > Vinyl chloride > Allyl chloride
C) Alyl chloride > Vinyl chloride > Propyl chloride
D) Allyl chloride > Propyl chloride > Vinyl chloride

888. The organic chloro compound, which shows complete stereochemical inversion during a SN2 reaction, is

A) **CH_3Cl**
B) $(C_2H_5)_2\,CHCl$
C) $(CH_3)_3CCl$
D) $(CH_3)_2CHCl$

889. $CH_3–CH_2–Br$ on treatment with LiAlH4 gives ethane gas while $(CH_3)_3C–Br$ on same treatment gives H_2 gas because

A) The former is SN2 and later is E2 reaction
B) The former is E2 and later is SN2 reaction
C) The former is SN1 and later is E2reaction
D) The former is E2 and later is SN2 reaction

890. Which one of the following statements is wrong

A) Lower alkyl halides are either colourless gases or volatile liquids
B) Alkyl halides are highly soluble in water
C) Alkyl halides burn easily with green edged flame
D) The higher alkyl halides are colourless solids

891. Tamarinds contain major quantities of following acid

A) Citric acid
B) Tartaric acid
C) Acetic acid
D) Butyric acid

892. Sour milk contains which acid

A) Citric acid
B) Tartaric acid
C) Acetic acid

D) Lactic acid

893. What is the common name of ethanoic acid?

A) **Acetic acid**

B) Ethanic acid

C) Formic acid

D) Propionic acid

894. Benzoic acid is a

A) Strong acid

B) Weak base

C) Salt

D) Weak acid

895. Artificial fruity smell and flavors of food are due to

A) Alcohols

B) Aldehydes

C) Ketones

D) Esters

896. ———— (IUPAC name) is product of butyric acid and ethanol

A) Ehyl butyrate

B) Methyl pentanoate

C) Butyl ethanoate

D) Ethyl butanoate

897. Amine acts as ———— in distilled water

A) Strong acid

B) Weak base

C) Salt

D) Neutral

898. Nicotine, caffeine, and morphine are

A) Alcohols
B) Aldehydes
C) **Alkaloids**
D) Carboxylic acids

899. Semicarbazide is a derivative of.

A) Urea

B) Formamide

C) Formic acid

D) Carboxylic acid

900. Malonic acid on continuous heating for long time produce

A) Acetic acid

B) Ethanoic acid

C) Propanoic acid

D) Formic acid

901. Benzamide on treatment with $POCl_2$ gives

A) Aniline

B) Benzonitrile

C) Chlorobenzene

D) Benzyl amine

902. **When benzene sulphonic acid and *p*-nitrophenol are treated with $NaHCO_3$, the gases released respectively, are**

A) SO_2, NO_2

B) SO_2, NO

C) SO_2, CO_2

D) CO_2, CO_2

903. When - COOH is attached directly to the benzene ring the acid is called

A) Aliphatic

B) Alicyclic

C) Carboxylic

D) Aromatic

904. The common name of propane 1 3-dioic is

A) Oxalic acid

B) Aromatic acid

C) **Malonic acid**

D) Fumaric acid

905. The common thing in phthalic acid and oxalic acid is that both are

A) Aromatic

B) Dicarboxylic

C) Hydrocarbons

D) Strong acids

906. The irritation caused by red ants bite is due to

A) Lactic acid

B) Formic acid

C) Uric acid

D) Acetic acid

907. The acid which is used as ink remover is

A) **Oxalic acid**

B) Succinic acid

C) Adipic acid

D) Acetic acid

908. Which of the following is the strongest acid?

A) Water

B) Formic acid

C) Acetic acid

D) Propanoic acid

909. Synthetic rubber is prepared by

A) **Acetic acid**

B) Formic acid

C) Carbonic acid

D) Benzoic acid

910. Acidic amino acids have.

A) 2 amino groups and 1 carboxylic group

B) 1 amino and 1 carboxylic group

C) 2 carboxylic groups and 1 amino group

D) 2 amino and 2 carboxylic groups

911. NH_3 molecule with a lone pair of electrons on nitrogen atom has a shape of
A) Tetrahedral
B) Trigonal pyramidal
C) Angular
D) Square planar

912. One Debye is equal to
A) 1.66×10^{-24} cm.
B) 9.1×10^{-31} cm.
C) 6.02×10^{-23} cm.
D) 3.336×10^{-30} cm.

913. Which of following orbitals is associated with lowest energy?
A) Atomic
B) Bonding molecular
C) Antibonding molecular
D) b and c

914. A bond with maximum covalent character is formed between
A) Chemically similar atoms
B) Atoms of different electronegativity
C) Atoms of different size
D) Identical atoms

915. Among the following molecules the shortest carbon to carbon distance is in
A) CH_3-CH_3
B) $CH_2 = CH_2$
C) CH ≡ CH
D) CH_3-CH_2-CH_3

916. Which of the following has highest ionization potential?
A) Li
B) Na
C) K
D) Rb

917. Which of the following conducts electricity due to the movement of ions?
A) Molten sodium chloride
B) Co
C) Graphite
D) Mercury

918. The example of non-polar molecule with polar bonds is
A) HCl
B) H_2O
C) SO_3
D) SO_2

919. Which of following molecules has shortest carbon to carbon bond length?
A) C ≡ C
B) C = C
C) C-C
D) All are same

920. Which of following pair of molecules is paramagnetic in nature?

A) O_2 and B_2
B) N_2 and O_2
C) N_2 and F_2
D) H_2 and N_2

921. Among the following chemical species bond order of———— highest?

A) H_2
B) H_2^+
C) H_2^-
D) All have same bond order

922. More stable products are obtained by a reaction which is

A) Endothermic
B) Exothermic
C) Isothermal
D) Simple

923. The energy is transferred from one body to another in the form of

A) Heat
B) Work
C) Mechanical work
D) All above

924. Which one of the following enthalpies is always an exothermic process?

A) Enthalpy of atomization
B) Enthalpy of neutralization
C) Enthalpy of ionization
D) Enthalpy of dissociation

925. When a strong acid reacts with a strong base the heat of neutralization in KJ/mol) is

A) +218
B) -57.4
C) +51.1
D) -25.0

926. Ethanol burns with heat of combustion in KJ/mol)

A) -1366
B) -57.4
C) -285.5
D) -285.5

927. In how many ways energy transfer from a system can occur?

A) One
B) Two
C) Three
D) Four

928. What is the SI unit of work?

A) Newton
B) Joule
C) Calorie
D) Watt

929. Evaporation of water is———— process

A) Endothermic
B) Exothermic
C) Non-energetic

D) Slow

930. The heat of combustion is measured by
A) Calorimeter
B) Colorimeter
C) Bomb calorimeter
D) Spectrophotometer

931. Unit of K_w are
A) mole dm^{-3}
B) mol^2 dm^{-3}
C) mol^2 dm^{-6}
D) mol^2 dm^{+3}

932. Which of the followings can explain the buffer action?
A) Common ion effect
B) Law of mass action
C) Le-Chatlier's Principle
D) All above

933. Which is the strongest bond?
A) C-C
B) C-H
C) C-N
D) C-F

934. The radius of ———— is smaller than its parent atom.
A) Ion
B) Cation
C) Anion
D) All

935. A polar bond is ———— than a non-polar bond.
A) Stronger
B) Same in strength
C) Weaker
D) All

936. The empirical formula and molecular formula of a chemical substance could be
A) Different
B) Identical
C) Both (a & b)
D) Ambiguous

937. One mole of Carbon (^{12}C) is equivalent to
A) 0.0112 kg
B) 1 kg
C) 120g
D) 12 g

938. Which of the following compounds has highest nitrogen contents?
A) NH_3
B) N_2H_4
C) NO
D) NH_4OH

939. One mole of H_2O contains
A) 81 g
B) 6.02×10^{23} atoms

C) 6.02×10^{23} molecules
D) 6.02×10^{23} ions

940. Chlorine (Cl) and chloride (Cl^-)
A) Are chemically identical
B) Are allotropes
C) Have same number of electrons
D) Have same number of protons

941. X-ray diffraction work shows that the diameters of the individual atoms are of the order of
A) 2×10^{-10} m
B) 2×10^{-8} m
C) 2×10^{-6} m
D) 2×10^{-4} m

942. Formation of a negative ion is a type of reaction
A) Exothermic
B) Endothermic
C) Adiabatic
D) Isothermal

943. Sublimation cab be defined as
A) Formation of a solution
B) Volatile liquid
C) Conversion of solid directly into vapors
D) Conversion of solid to liquid

944. A crucible made of porcelain with a perforated bottom is called.
A) Gooch crucible
B) Whatman crucible
C) Glass crucible
D) All

945. Separation of an insoluble solid from a liquid phase is done by
A) Sublimation
B) Vaporization
C) Condensation
D) Filtration

946. The process of separation of crystals from the mother liquor is called
A) Crystallization
B) Condensation
C) Vaporization
D) Filtration

947. Which of following is truly is Avogadro constant?
A) Atoms in 1g of helium gas
B) Molecules in 35.5g chlorine gas
C) Electrons needed to deposit 24g magnesium ions
D) Atoms in 24g of magnesium

948. Isotopes of an element do not have
A) Same chemical properties
B) Same number of electrons
C) Same number of protons
D) Same number of neutrons

949. Which of the following will be heaviest?
A) 2 mol N_2

B) 1 mol of O_3
C) 2 mol of O_2
D) 2 mol of CO_2

950. CO^+ is an example of
A) Stable molecule
B) Cationic molecular ion
C) Anionic molecular ion
D) Free radical

951. What is the number of covalent bonds in 0.001Kg of ammonia are?
A) 6.02×10^{23}
B) 1.062×10^{23}
C) 10.62×10^{24}
D) 1.062×10^{24}

952. Electron microscopes are based upon interaction of objects with
A) Electron Beam
B) visible light
C) Infrared light
D) X-rays

953. Paper chromatography can be performed in
A) Radial
B) Descending
C) Ascending
D) All

954. In chromatography the K stands for
A) Rate Law
B) Rate
C) Distribution coefficient
D) Both a & b

955. If the stationary phase is solid, then it is called
A) Adsorption chromatography
B) Partition chromatography
C) Gas chromatography
D) Paper chromatography

956. Which of the following gas diffuses most rapidly?
A) Cl_2
B) N_2
C) CH_4
D) CO_2

957. On temperature scale the absolute zero is equal to
A) -273.15K
B) -273.15°C
C) -237.15°C
D) -273°C

958. In SI units the value of gas constant is
A) 2.987 atm $dm^3K^{-1}mol^-$
B) 8.314 atm $dm^3K^{-1}mol^{-1}$
C) 1.987 atm $dm^3K^{-1}mol^{-1}$
D) 8.313 N-m $K^{-1}mol^{-1}$

959. van der Waal's week intermolecular forces are present in

A) Only gases
B) Only liquids
C) Only solids
D) All

960. Rydberg constant is a fundamental constant of atomic physics and has value of

A) $1.6\times10^{7}\ m^{-1}$
B) $1.7904 \times 10^{7}\ m^{-1}$
C) **$1.09768 \times 10^{7}\ m^{-1}$**
D) $1.9678 \times 10^{7}\ m^{-1}$

961. Poison for platinum catalyst is?

A) Arsenic
B) Silver
C) Argon
D) Zinc

962. Catalyst usually belongs to block elements

A) s
B) p
C) d
D) f

963. The substance that lowers the efficiency of catalyst are called

A) Promoters
B) Inhibitors
C) Both promoters & inhibitors
D) Speeders

964. The chemical substance which increase the effect of catalyst

A) promoters
B) inhibitors
C) Both promoters & inhibitors
D) Speeders

965. The pH of water is greater at temperature

A) 14°C
B) 15°C
C) 18°C
D) 25°C

966. A reaction has rate equation rate=k $[NO_2]^2$, it is

A) First order
B) Second order
C) Third order
D) Zero order

967. $2H_2+2NO \rightarrow 2H_2O+N_2$ order for this reaction is

A) 1
B) 2
C) 3
D) 4

968. By the use of catalyst energy of activation is

A) Lower
B) Higher
C) Increased

D) Released

969. By adding suitable catalyst, reaction rate is
A) Increases
B) Decreases
C) Remains constant
D) Increase as well as decrease

970. A substance that effects the rate of reaction but remains unaltered at the end of reaction is called
A) Acid
B) Base
C) Catalyst
D) Activator

971. Reaction cannot be initiated by a catalyst but only its speed can be increased which is possible
A) Physically
B) Thermodynamically
C) Chemically
D) In laboratory

972. The catalysts are of
A) Two types
B) Three types
C) Five types
D) Four types

973. The branch of chemistry in which reaction rates are studied is known as
A) Chemical kinetics
B) Chemical equilibrium
C) Electrochemistry
D) Thermochemistry

974. The study of chemical kinetics becomes highly complicated if there occurs
A) Reversible reaction
B) Surface reaction
C) Side reaction
D) Any or all above

975. To explain the subject of chemical kinetics which theories has been proposed
A) Collision theory of bimolecular reactions
B) Absolute reaction rates or activated complex theory
C) Both of these
D) None of these

976. A chemical reaction has characteristic.
A) Concentration
B) Temperature
C) Catalyst
D) All of the above

977. Which of the following is not the characteristic of balanced thermochemical equation?
A) Number of moles of various species
B) Formulae of the species
C) State of species
D) Condition of T and P

978. That reaction which progresses slowly showing measurable rate is known as
A) Slow reaction
B) Fast reaction

C) Moderate reaction
D) None of these

979. As compared to non-ionic reactions Ionic reaction are
A) Slower
B) moderate
C) Faster
D) not faster

980. The most famous polymers make the foam are.
A) poly urethane
B) polyamide
C) polyester
D) none of these

981. Non-volatile film forming constituents of the paints are
A) pigments
B) driers
C) drying oils
D) thinners

982. The corrosion of metal involves.
A) chemical reaction
B) physical reaction
C) both a and b
D) none

983. A potable water has the turbidity value.
A) 5 NTU
B) 10 NTU
C) 50 NTU
D) 15 NTU

984. What is the carbon range in the naphtha?
A) C_1-C_5
B) C_4-C_{11}
C) C_1-C_4
D) C_5-C_{12}

985. The crude oil is treated with copper oxide to remove.
A) Salt
B) mud
C) sulphur
D) all of these

986. A good coal should have:
A) moisture content
B) ash content
C) high carbon content
D) All the above

987. Producer gas is mixture of:
A) CO+ H_2
B) CO+ CH_4
C) CO+ N_2
D) CH_4+H_2

988. A fuel gas which is also used as a source of hydrogen is
A) producer gas
B) water gas
C) coal gas
D) natural gas

989. Which of the coal has highest percentage of carbon?
A) peat
B) bitumen
C) anthracite
D) lignite

990. Cermets are sintered materials, consisting of mixtures of?
A) Ceramics and clay
B) ceramics and water
C) ceramics and metals
D) none

991. Which of the following is not co-polymer?
A) **Teflon**
B) Buna-S
C) Nylon 6
D) Bakelite

992. Amorphous polymer doesn't have definite
A) glass transition temperature
B) melting point
C) both a and b
D) none

993. The chemical composition of the rust is
A) $Fe_2O_3.H_2O$
B) Fe_2O_3
C) $Fe_3O_4.H_2O$
D) $Fe_2O_3.xH_2O$

994. Brakish water can be purified by using
A) lime-soda water
B) permuit process
C) boiling
D) **reverse osmosis**

995. Permanent hardness of water in water is due to presence of
A) Calcium chloride
B) magnesium sulphate
C) **both of the above**
D) none of them

996. Which of the following can be used for the purity of substances?
A) Gas chromatography
B) UV spectroscopy
C) IR spectroscopy
D) All

997. The IR spectrum of benzene will show strong band at

A) 3000 cm^{-1}
B) 3300 cm^{-1}
C) 1650–1750 cm^{-1}
D) 1700 cm^{-1}

998. When the photon emission occurs between states of the different energy states (T1-S0) the process called?
A) Phosphorescence
B) fluorescence
C) inversion
D) none

999. The enriched uranium-235 used as nuclear fuel has the percentage of
A) 3-5%
B) 1%
C) 2-3%
D) none

1000. Which one of these is straight fertilizer?
A) Urea
B) DAP
C) CAN
D) All of these