A

19704 **120 MINUTES**

1. The metal present in the compound used as "anti copper drug" to treat Wilson's disease is:
   A) Molybdenum B) Ruthenium
   C) Bismuth D) Gold

2. Quadrupole bonding is present in
   A) $Fe_2(CO)_9$ B) $Re_2Cl_8^{2-}$
   C) $Mn_2(CO)_{10}$ D) $Re_2Cl_4(PMe_2Ph)_4$

3. Which one of the following complex does not obey the 18–electron rule?
   A) $Mn(CO)_3$ (η^5-C_5H_5) B) $[Ni_2(\eta^5\text{-}Cp)2(CO)_2]$
   C) (η^5-C_5H_5)Re (η^6-C_5H_5) D) $[Mn(CO)_4Cl_2]^{2-}$

4. In deoxyhemoglobin, the state of iron is:
   A) Fe(III) is in low spin state and diamagnetic
   B) Fe(II) is in low spin state and diamagnetic
   C) Fe(II) is in high spin state, paramagnetic
   D) Fe(III) is in high spin state, paramagnetic

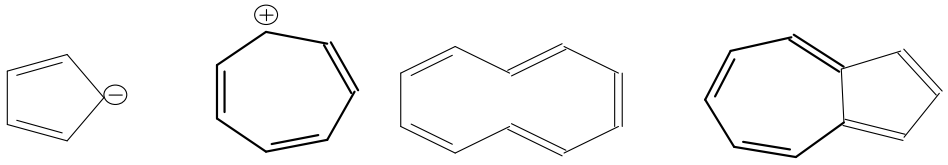
5. The electroanalytical technique in which current is monitored while potential is scanned in forward and backward directions:
   A) Coulometry B) Cyclic voltammetry
   C) Polarography D) Amperometry

6. Van deemter equation for column efficiency of chromatographic columns depends on:
   A) Eddy diffusion B) Longitudinal diffusion
   C) Mass transfer D) All the above

7. Which of the following species belongs to Arachnoborane?
   A) $B_7H_7^{2-}$ B) $B_6H_6^{2-}$ C) B_6H_{10} D) $C_2B_7H_{13}$

8. Total number of stereoisomer possible for complex with general formula Ma_2bcde will be:
   A) 7 B) 10 C) 12 D) 15

9. Identify the systems which are aromatic in nature.



I II III IV

A) I, II, III B) I, III, IV C) I, II, IV D) II, III, IV

10. Debye-Smoluchowski equation for rate constant of a reaction in solution is characterized by:
A) Very high activation energy reactions
B) Diffusion controlled reactions
C) Branched chain reactions
D) Unimolecular reactions

11. For a calomel electrode, the electrode reaction is reversible with respect to the concentration of :
A) Hg_2^{2+} B) Cl^- C) Hg_2Cl_2 D) Hg

12. Which of the following is not a precursor for the biosynthesis of testosterone?
A) Lanosterol B) Cholesterol C) Squalene D) Estradiol

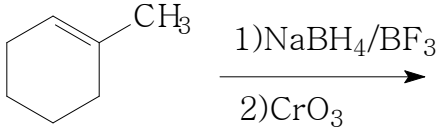
13. Benitoite is represented by $BaTi(SiO_3)_3$ which falls under the category of
A) Pyrosilicate B) Cyclic silicate
C) Sheet silicate D) Orthosilicate

14. Inorganic benzene is prepared by reacting diborane with ammonia and the formula is
A) $H_3B_3O_3$ B) $B_3N_3H_6$ C) BN D) $B_3N_3O_3$

15. The active form of Vitamin B_{12} contains Co(III) attached to:
A) Phytyl group B) Cyanide group
C) Adenosyl group D) Porhyrin ring

16. Luminal is a drug primarily used as:
A) Psychedelic drug B) Analgesics
C) Hypnotics D) Anaesthetics

17. The product of the following reaction is:



A) Methyl hexanone B) Methyl hexanol
C) Methyl hexane D) Hexanone

18. Which of the following oxide is least basic?
A) Cl_2O_7 B) SiO_2 C) Al_2O_3 D) P_2O_5

19. Which of the following compound cannot undergo Claisen condensation?
A) Ethyl acetate B) Isobutylacetate
C) Ethyl-3-methylbutanoate D) Ethyl-2-methylpropanoate

20. Fast reactions studied by quenching of fluorescence where the parameters yielding a straight line graph is:
A) Intensity of light absorbed Vs Intensity of light emitted
B) Fluorescent yield Vs Concentration of Reactant
C) Fluorescent yield Vs Concentration of Quencher
D) Intensity of light absorbed Vs Concentration of Quencher

21. At a temperature of 310K, two moles of an ideal gas is expanded irreversibly and isothermally until its volume is doubled and absorbed 3.41 KJ of heat from the surrounding. The total entropy change (ΔS_{total}) will be

A) -11 J/K B) 0.52 J/K C) 11.52 J/K D) -0.52 J/K

22. Which of the following statements are true?

I) Fermions are indistinguishable
II) Any number of bosons can occupy a given energy level
III) Maxwellons are distinguishable
IV) Bosons possess integral spin

A) I, II, III B) I, II, IV
C) II, III, IV D) All statements are true

23. The species which cannot exhibit Jahn –Teller distortion when bound in octahedral aqua complex

A) Cu^{2+} B) Ti^{3+} C) Mn^{2+} D) Fe^{2+}

24. The correct order of CO stretching vibrations of $[Cr(CO)_6]$, $[V(CO)_6]^-$, $[Ti(CO)_6]^+$ is,

A) $[Cr(CO)_6] < [V(CO)_6]^- < [Ti(CO)_6]^+$
B) $[Cr(CO)_6] < [V(CO)_6]^- > [Ti(CO)_6]^+$
C) $[Cr(CO)_6] > [V(CO)_6]^- < [Ti(CO)_6]^+$
D) $[Cr(CO)_6] > [V(CO)_6]^- > [Ti(CO)_6]^+$

25. Total number of hyperfine signals in ESR spectrum of p-xylene radical is:

A) 35 B) 11 C) 7 D) 5

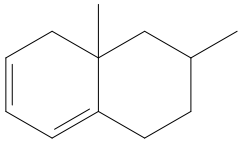
26. The NMR spectrum of an organic compound containing C, H and O only, showed δ 7.2(5H,s) and 3.5 (2H,s). It also showed a fragment ion of m/z 45 in the mass spectrum. Then the base peak in the mass spectrum of the compound may fall at:

A) 77 B) 91 C) 14 D) 44

27. Theoretical number of fundamental vibrational bands for benzene is

A) 31 B) 28 C) 30 D) 12

28. The absorption maximum in the UV spectrum of the following molecule is:



A) 273 B) 268 C) 234 D) 263

29. The source of electromagnetic radiation in IR spectroscopy is:

A) Klystron valve B) Helium discharge lamp
C) Tungsten filament lamp D) Nernst filament

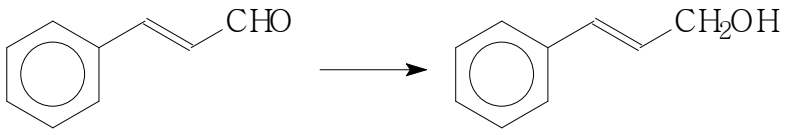
30. Characterization of transient free radicals can be done by the spectroscopic technique called:

A) NMR B) CIDNP C) ORD D) DEPT

31. Among the following, only the primitive arrangement of lattice points in the unit cell is possible with:

A) Triclinic B) Rhombohedral
C) Hexagonal D) All the above

32. The reagent suitable for the following conversion is:



A) DCC B) H_2/Pd C) DIBAL D) LDA

33. Industrial conversion of cyclohexanone to caprolactam, which is employed in the manufacture of Nylon-6, involves:

A) Aldol condensation B) Beckmann rearrangement
C) Cope rearrangement D) Fries rearrangement

34. Which of the following compound cannot undergo Cannizzaro reaction?

A) Fufural B) Benzaldehyde
C) Formaldehyde D) Acetaldehyde

35. The normality of a solution prepared by diluting 250 ml of 0.4N H_2SO_4 with 1L of water is:

A) 0.1 N B) 0.08 N C) 0.01 N D) 0.05 N

36. Determine the potential of a half cell consisting of cadmium electrode in a solution of 0.01 M cadmium nitrate. (E^o_{Cd} = - 0.403 V)

A) +0.403 B) -0.403 C) +0.462 D) -0.462

37. The time required for a molecule of the mobile phase to pass through the column is called:

A) Retention time B) Solute migration rate
C) Adjusted retention time D) Dead time

38. The ground state term symbol for Mn^{2+} ion in octahedral field is:

A) $^3D_0$ B) $^2P_2$ C) $^2S_{5/2}$ D) $^6S_{5/2}$

39. Calculate the probability of finding an electron in a one dimensional box between 0 to 1 A^o for the ground state. Given that the length of box is $2A^o$.

A) 1.0 B) 0.5 C) 0.25 D) 0.75

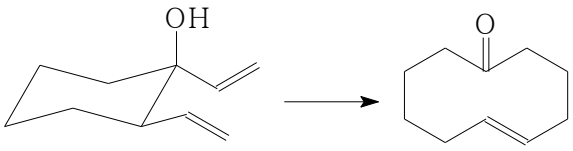
40. The transition which is not found in the absorption spectrum of $[V(H_2O)_6]^{3+}$ is:

A) $^3T_{1g}(F) \rightarrow {}^3T_{2g}$ B) $^3T_{1g}(F) \rightarrow {}^3A_{2g}$
C) $^3T_{1g}(F) \rightarrow {}^3T_{1g}(P)$ D) $^3T_{1g}(F) \rightarrow {}^2E_{2g}$

41. Dimerization of cyclopentadiene is an example of:

A) [4+2] cycloaddition B) [2+2] cycloaddition
C) [2+3] cycloaddition D) [4+2+2] cycloaddition

42.



The above reaction involve:

A) Electrocyclic reaction B) [3,3] Sigmatropic rearrangement
C) [2+2] cycloaddition D) [1,5] Sigmatropic rearrangement

43. Prominent decay pathway of excited state shown during fluorescence in Jablonski diagram is:

A) $S_1 \rightarrow S_0$ B) $T_2 \rightarrow T_1$ C) $T_1 \rightarrow S_0$ D) $S_1 \rightarrow T_0$

44. Eutrophication which kills animal life in water bodies is primarily due to:

A) Polychlorinated biphenyls B) DDT
C) Sodium arsinite D) Phosphate fertilizers

45. Polydispersity index of a polymer is best described by (Given: M- Molar mass, X-Degree of polymerization):

A) M_n/ M_w B) M_w/ X_w C) M_w/ M_n D) X_n/ X_w

46. The correct statement regarding F-centre in a crystal lattice is:

A) Anionic vacancy occupied by electron
B) Ionizing radiation produces F-centres
C) F- centres are studied by EPR
D) All the above

47. At what temperature the most probable speed of O_2 molecules have the same value of root mean square speed of O_2 molecules at 300 K?

A) 600 K B) 450 K C) 273 K D) 310 K

48. In the synthesis of trans-$[PtCl_2(NO_2)(NH_3)]^-$ from $[PtCl_4]^{2-}$, the trans directing ability is in the order:

A) $Cl^- < NH_3 < NO_2^-$ B) $NH_3 < NO_2^- < Cl^-$
C) $NH_3 > Cl^- > NO_2^-$ D) $NH_3 < Cl^- < NO_2^-$

49. The nitride of sulphur which forms planar seven membered ring is:

A) Trithiazyltrifluoride B) Tetrathiazyl tetrafluoride
C) Thiotrithiazyl cation D) Tetrasulphurtetranitride

50. Which of the following species exhibit charge transfer spectrum?

A) Prussian Blue B) $KMnO_4$ C) $[CuCl_4]^{2-}$ D) All the above

51. Which of the following does not contribute significantly to global warming?

A) CH_4 B) N_2O C) CCl_3F D) SO_2

52. Which of the following is not true about cytochrome?
A) They are one electron transfer reagents.
B) Shuttles between Fe(II) and Fe(III) states
C) Fe atoms are in corrin ring
D) Involves outer-sphere electron transfer

53. The point group of staggered ferrocene is:
A) D_{5h} B) D_{5d} C) $D_{\infty d}$ D) C_{5h}

54. Highly dense and stereo regular polymer of propylene can be synthesized by employing:
A) Titanium tetrachloride and triethylaluminium
B) Titanium isopropoxide and t-butyl alcohol
C) Aluminiumisopropoxide and acetone
D) Tebbe reagent

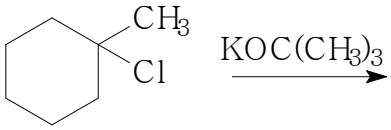
55. In the infrared spectrum of cyclopentanone absorption due to carbonyl group is found at 1746 cm^{-1} and 1750 cm^{-1}. It is best explained by:
A) Overtones B) Combination bands
C) Difference band D) Fermi resonance

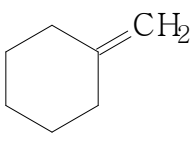
56. Calculate the chemical shift in ppm for a proton in a steroid molecule which shows a resonance at 120 Hz downfield from TMS . The operating frequency of given NMR spectrophotometer is 60 MHz.
A) 1ppm B) 2ppm C) 6ppm D) 3ppm

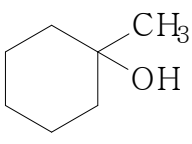
57. Which of the following molecule do not opt for McLafferty rearrangement during fragmentation in mass spectrometry?
A) 2-hexanone B) Pentanal
C) 3-pentanone D) 3-methylpentanal

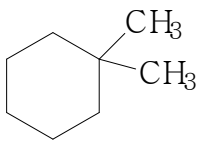
58. Elimination-addition mechanism involving aryl halides with liquid ammonia involves
A) Carbene B) Nitrene C) Carbanion D) Benzyne

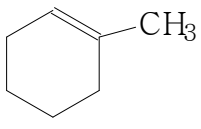
59. Identify the product of the following reaction:



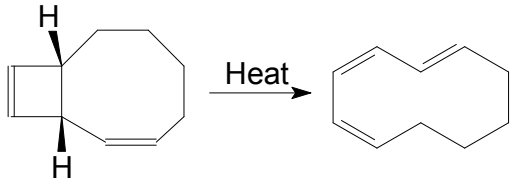
A) 

B) 

C) 

D) 

60. The following reaction is identified as:



A) Conrotatory electrocyclic reaction
B) Disrotatory electrocyclic reaction
C) [1,3] sigmatropic rearrangement
D) [1,5] sigmatropic rearrangement

61. Which of the following is not a concerted reaction?
A) Cope rearrangement B) Claisen condensation
C) Diels Alder reaction D) Alder Ene reaction

62. Among the following, which pair of elements possess nearly same atomic radii?
A) Zr, Hf B) Zr, Ta C) Ti, Zr D) Zr, Ce

63. The correct order of spin only magnetic moments (in B.M) is given in:
A) $[Fe(CN)_6]^{4-} > [MnCl_4]^{2-} > [CoCl_4]^{2-}$
B) $[MnCl_4]^{2-} > [CoCl_4]^{2-} > [Fe(CN)_6]^{4-}$
C) $[Fe(CN)_6]^{4-} > [CoCl_4]^{2-} > [MnCl_4]^{2-}$
D) $[CoCl_4]^{2-} > [MnCl_4]^{2-} > [Fe(CN)_6]^{4-}$

64. The structure of DNA contain
I) Peptide linkage
II) Phosphodiester linkage
III) Stabilising energy from the vertical π-π stacking
IV) Right handed duplex

A) II, III, IV B) I, II, III C) I, III, IV D) I, II, IV

65. Which of the following is a bicyclic monoterpenoid?
A) Geraniol B) Limonene C) α-Pinene D) Farnesol

66. Number of milligrams of KOH required to neutralize one gram of fat is denoted as:
A) Saponification number B) Acid number
C) Reichert-Meissel number D) None of the above

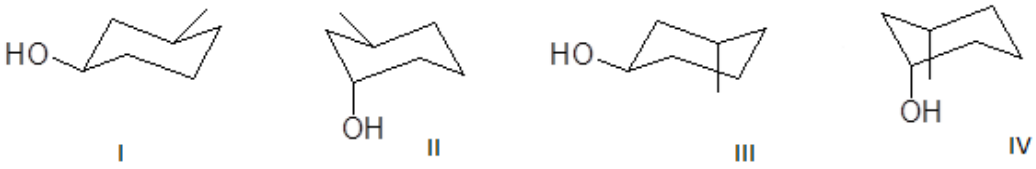
67. Certain Protein on treatment with glyoxalic acid and conc. sulphuric acid exhibited violet ring. This indicates:
A) Presence of peptide linkage
B) Presence of amino acid with benzene ring
C) Presence of tyrosine
D) Presence of tryptophan

68. The molecule having ability to show microwave spectrum is:
A) CH_4 B) Acetylene C) CO D) CO_2

69. Total number of spherical nodes possible for 4d orbital is

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

70. The most stable conformer among the following.

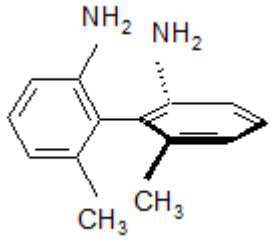


A) I B) II C) III D) IV

71. The statement which is not correct about decalin.

A) Trans isomer is more stable than cis.
B) Cis isomer has three gauche-butane interactions
C) Trans isomer is incapable of ring inversion
D) Cis decalin shows two peaks in NMR

72. The Absolute configuration of the following molecule.



A) (1R, 2S)- Configuration B) (R)- Configuration
C) (S)- Configuration D) Cannot be determined

73. Identify the electro kinetic phenomenon in which the electric field is created when liquid is made to flow along a stationary charged surface.

A) Streaming potential B) Sedimentation potential
C) Electrophoresis D) Electro osmosis

74. The average molecular mass of a colloid can be determined by:

A) Flocculation value B) Osmotic pressure measurement
C) Tyndall effect D) Brownian movement

75. The substance which is more effective in coagulating Arsenic (III) sulphide sol is:

A) $Al_2(SO_4)_3$ B) Na_3PO_4 C) $CaCl_2$ D) NaCl

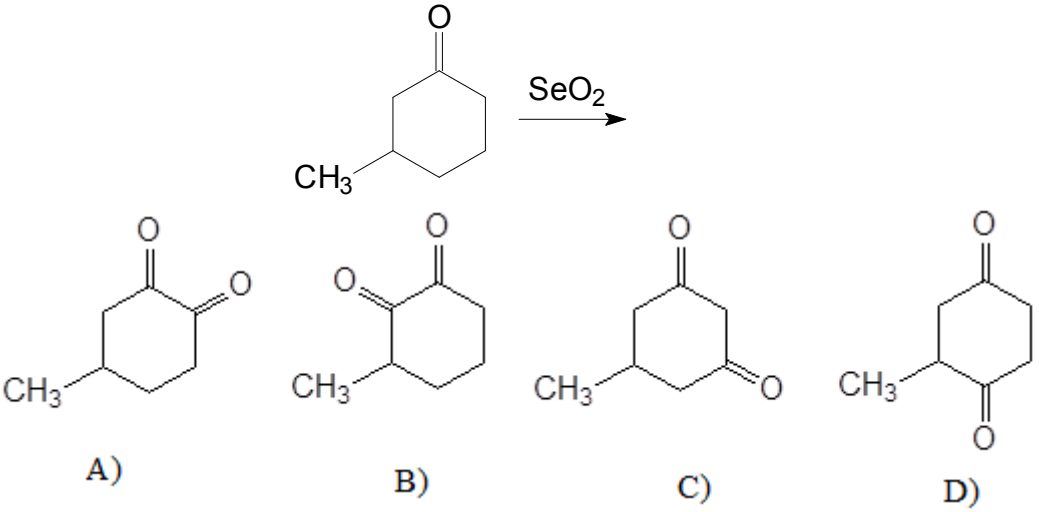
76. Which of the following molecule shows linear geometry?

A) SiO_2 B) SO_2 C) NO_2^+ D) $SnCl_2$

77. Carbon dioxide is kept in a steel vessel maintaining a pressure of 0.5 atm and temperature 1000K. On addition of graphite some CO_2 converted into CO. If the total pressure at equilibrium is 0.8 atm, the value of Kp is:

A) 3 atm B) 1.8 atm C) 0.45 atm D) 0.3 atm

78. The major product in the following reaction is:



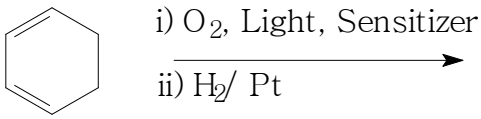
79. The dehydrating agent used for the formation of ester from corresponding acid and alcohol is:

A) DCC B) LDA C) DIBAL D) H_2SO_4

80. The metal atom present in Gilman's reagent is:

A) Zn B) Mg C) Cu D) Ti

81. The product formed in following photochemical reaction is

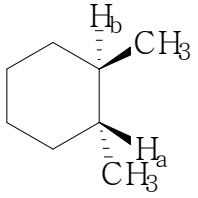


A) Cyclohexane-1,4-diol B) Cyclohexan-1-ol
C) Cyclohexanone D) Cyclohexane

82. When a diatomic gas is expanded at 100 atm at T>500 K, heating is observed. It is because:

A) Joule- Thomson coefficient is positive
B) Joule- Thomson coefficient above critical temperature is negative
C) Adiabatic expansion fails
D) Inversion temperature is below 500K

83. In the compound



the hydrogen atoms marked Ha and Hb are:

A) Homotopic B) Enantiotopic
C) Diastereotopic D) Anomer

84. The most suitable reagent used for the cis-1,2-dihroxylation of alkenes is
A) O_3 B) DDQ C) MCPBA D) OsO_4

85. The hybridization involved in the complex ion $[Ni(CN)_4]^{2-}$ is:

A) dsp^2 B) sp^3d^2 C) sp^3 D) sp^3d

86. When acetaldehyde reacts with benzaldehyde in basic medium, cinnamaldehyde is formed. This reaction is identified as:
A) Aldol condensation B) Perkin reaction
C) Claisen-Schmidt reaction D) Dieckmann condensation

87. Amides with no substituent on the nitrogen when treated with a solution of bromine and alkali, it forms a product with:
A) one hydrogen atom more than amide
B) one carbon atom less than amide
C) one carbon atom more than amide
D) one nitrogen atom less than amide

88. Aspirin is the acetylation product of:
A) o-hydroxybenzoic acid B) m-hydroxybenzoic acid
C) p-dihydroxybenzene D) p-aminophenol

89. The compound 3-methyl-pent-2-ene on reaction with HBr in presence of organic peroxide to yield X. Total number of stereoisomers possible for X is:
A) Zero B) Two C) Three D) Four

90. The ionization isomer possible for the compound $[Cr(H_2O)_4Cl(CN)]Cl$:

A) $[CrCl_2(CN)(H_2O)_3]H_2O$ B) $[Cr(H_2O)_4Cl(NC)]Cl$

C) $[Cr(H_2O)_4Cl_2]CN$ D) $[Cr(H_2O)_4Cl(CN)]Cl$

91. The condensation polymers among the following are:
I) Dacron II) Perlon III) Kevlar IV) Butyl rubber

A) I, II, IV B) I, II, III C) II, III ,IV D) I, III, IV

92. Which of the following is not a chromophore?
A) Azo group B) Amino group
C) Nitro group D) Ethylenic group

93. Indicator used for determining calcium in presence of other metals in complexometric titration is
A) Pfitzer- Moffat reagent B) Michler's ketone
C) Patton and Reeder reagent D) Dragendroff's reagent

94. Which of the following is not true about quinine?
A) Contains two tertiary N atoms
B) Contains a primary alcoholic group
C) Contains a methoxyl group
D) Contains a olefinic group

95. The statement which is not correct about carbon nanotube is:
A) Single walled and multi walled variants exixts
B) Hexagonal lattice of carbon forming hollow cylinder
C) sp^3 hybridization leads to stronger interaction
D) Generally they are chiral

96. The first ionisation energy of Li, Be, B, C,N and O follows the order:

A) O > N > C > B > Be >Li
B) N > O > C > B > Be > Li
C) N > O > C > Be >B > Li
D) O > N > C > Be > B > Li

97. The *styx* number of diborane is:
A) 2102 B) 2002 C) 2012 D) 2112

98. Among Cd, Pd and Ag, which of them have completely filled d orbitals in their ground state?
A) Cd only
B) Cd and Ag only
C) Cd and Pd only
D) Cd, Pd and Ag

99. Magnetic moment of Cr, Mn^+ and Fe^{2+} are x, y, z respectively. The values follow the following order (Atomic numbers of Cr, Mn and Fe are 24, 25 and 26 respectively)

A) x > y = z B) y > x = z C) z > x = y D) z < x = y

100. Which of the following pairs of electronic configurations of high spin 3d metal ions in an octahedral field undergo Jahn-Teller Distortion?

A) d^3, d^9 B) d^5 , d^9 C) d^4 , d^9 D) d^6 , d^9

101. Consider the following complexes:
1) $[Pt(NH_3)_6]Cl_4$ 2) $[Cr(NH_3)_6]Cl_3$
3) $[Co(NH_3)_4Cl_2]Cl$ and 4) $K_2[PtCl_6]$
These compounds are dissolved in the same solvent to make a 10^{-3} M solution. The conductance values of the compounds follow the order

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

102. Among s,p,d,f orbitals which of the following is right?
A) s and d orbitals are gerade and p and f orbitals are ungerade
B) s orbitals are gerade and p,d,f orbitals are ungerade
C) s and f orbitals are gerade and p and d orbitals are ungerade
D) s and p orbitals are gerade and d and f orbitals are ungerade

103. I . The ionisation energy of NO is lower than that of N_2
II. The electron is removed from the antibonding orbital for the formation of NO^+

A) I is right but II is not the correct explanation for it
B) I is right and II is the correct explanation for it
C) I is not right but II is right
D) Both I and II are wrong

104. The point groups of eclipsed and staggered ethane are
A) D_{3h} and C_{3v} respectively B) D_{3h} and D_{3d} respectively
C) D_{3h} and D_3 respectively D) D_{3h} and C_{3h} respectively

105. The characters under E,C_2, σ_v and σ_v' for an irreducible representation for C_{2v} point are 1,-1, -1 and 1 respectively. The Mulliken symbol for the representation is:
A) B_2 B) A_1 C) A_2 D) B_1

106. Which order is correct for the vibrational frequency of C-H, C-O, C-Br, C-C and C-Cl?
A) C-H > C-Cl> C-C > C-O > C-Br
B) C-H > C-C > C-O > C-Cl> C-Br
C) C-Br > C-Cl> C-O > C-C > C-H
D) C-Br > C-Cl> C-C > C-O > C-H

107. The molecular ion peaks in the mass spectrum of ethyl bromide will be observed at m/z values:
A) 107 and 108 B) 108 and 110 C) 110 and 111 D) 108 and 109

108. The number of lines in the Mossbauer spectra of $K_4[Fe(CN)_6]$ and $K_3[Fe(CN)_5NO]$ are
A) 1 and 2 respectively B) 2 for both
C) 1 for both D) 2 and 1 respectively

109. The linkage present in Nylon 66, Cellulose and PET are
A) amide, ether and ester linkage respectively
B) ester, ether and amide linkage respectively
C) ester, amide and ether linkage respectively
D) amide, ester and ether linkage respectively

110. Among SO_2, NO and NO_2 the primary pollutants is/are
A) NO only B) NO_2 only C) SO_2 only D) NO and SO_2

111. The miller indices of a plane that cuts through the axes at 2a, 3b and c are:
A) (231) B) (321) C) (236) D) (326)

112. Which of the following statements are right?
i) The process will be spontaneous if $\Delta H < 0$ and $\Delta S > 0$
ii) The process will be spontaneous if $\Delta H < 0$ and $\Delta S > 0$ at low temperature
iii) The process will be spontaneous if $\Delta H > 0$ and $\Delta S < 0$ at high temperature
iv) The process will be spontaneous if $\Delta H > 0$ and $\Delta S < 0$

A) i and iv are correct B) i and iii are correct
C) i and ii are correct D) iii and iv are correct

113. The rate constant of a reaction is equal to 2.4×10^4 $mol^{-1}Ls^{-1}$. The activation energy is 4.0 x 10 kJ mol^{-1} . The pre exponential factor "A" when $T \rightarrow \infty$ is

A) 1.2×10^4 $mol^{-1}Ls^{-1}$ B) 4.0×10^4 $mol^{-1}Ls^{-1}$
C) 2.0×10^4 $mol^{-1}Ls^{-1}$ D) 2.4×10^4 $mol^{-1}Ls^{-1}$

114. Which of the following statements are correct?
i) Smaller the gold number smaller is the protective power
ii) Smaller the gold number greater is the protective power
iii) Lyophobic sols are protective sols
iv) Lyophilic sols are protective sols

A) i and iii are correct B) ii and iv are correct
C) ii and iii are correct D) i and iv are correct

115. For adsorption of gases on solids:
A) Decrease of temperature and increase of pressure increases adsorption
B) Increase of temperature and decrease of pressure increases adsorption
C) Both increase of temperature and pressure increases adsorption
D) Both decrease of temperature and pressure increases adsorption

116. Arrange the following reduction half reactions in the increasing order of standard reduction potentials at 25^0C:
i) Cu^{2+} (aq) + 2e → Cu
ii) $2H_2O(l) + 2e \rightarrow H_2(g) + 2OH^-$ (aq)
iii) Na^+ (aq) + e → Na(s)
iv) $Cl_2(g) + 2e \rightarrow 2Cl^-$

A) iii < ii < iv < i B) iii < ii < i < iv
C) i < iv < ii < iii D) i < iv < iii < ii

117. Anode used in Leclanche cell is:
A) Zinc B) Mercury C) Steel D) Carbon

118. Sanger's reagent is:
A) 1-Fluro-2,4-dinitrobenzene B) 1-Fluro-2,3-dinitrobenzene
C) 1-Fluro-2,4-dicynobenzene D) 1-Fluro-2,3-dicyanobenzene

119. Among the following which is not a coenzyme?
A) Biotin B) Vitamin K C) Vitamin B3 D) Vitamin E

120. A racemic base can be resolved by:
A) meso tartaric acid B) propanoic acid
C) dl-tartaric acid D) (-) mandelic acid