TEACHERS RECRUITMENT BOARD, CHENNAI - 6

Written Competitive Examination for Direct Recruitment of

POST GRADUATE ASSISTANTS (2012 - 2013) - 13PG-05 - A Series

Time Allowed : 3 Hours **CHEMISTRY** **Maximum Marks : 150**

1. The nitration products of quinoline are :
A) 8 - nitroquinoline and 5-nitroquinoline
B) 2 and 4 - nitroquinoline
C) 3 and 8 - nitroquinoline
D) 3 and 5 - nitorquinoline

2. The ozonolysis products of zingiberine are :
A) acetaldehyde, acetic acid and laevulic acid
B) acetone, laevulic acid and succinic acid
C) acetone, malonic acid and succinic acid
D) acetaldehyde, phthalic acid and succinic acid

3. Cholesterol contains a double bond and an 'OH' group at which position?
A) C - 3 and C - 5 B) C - 5 and C - 3
C) C - 20 and C - 3 D) C - 4 and C - 6

4. The radiation density of Black Body radiation calculated by Planck is :

A) $\rho(\nu) = \frac{8\pi V^3}{C^2}$ B) $\rho(\nu) = \frac{8\pi V^2}{C^2} E(\nu)$

C) $\rho(\nu) = \frac{8\pi h\nu^3}{C^3} \cdot \frac{d\nu}{e^{\frac{h\nu}{k_B T}} - 1}$ D) $\rho(\nu) = \frac{h\nu}{e^{\frac{h\nu}{k_B T}} - 1}$

5. A ball (m = 250 g) is moving with a velocity of 3000 cm s^{-1}. If its position is located with an uncertainity of 400 nm, what will be the uncertainity in its velocity?
A) 6.627×10^{-27} ms^{-1} B) 6.62×10^{-34} ms^{-1}
C) 30 ms^{-1} D) 9.1×10^{-31} ms^{-1}

6. The Learning of a particular task faciliates subsequent to learning of another task is called :
A) Negative transfer of learning
B) Zero transfer of learning
C) Positive transfer of learning
D) None of the above

7. Theory of hierarchical of human needs is proposed by :
A) Morgan B) Murry
C) Atkinson D) Abraham Maslow

8. Which is not defence mechanisms?
A) Rationalization B) Compensation
C) Projection D) Conflict

9. Which of the following is not a biological factor of personality?
A) Physique B) Intelligence
C) Nervous system D) Chemique

10. The formula used to arrive IQ is :
A) $\frac{M.A}{C.A} \times 100$ B) $\frac{C.A}{M.A} \times 100$
C) M.A. × C.A. × 100 D) M.A. × C.A - 100

11. In one of the Maxwell's relations $\left(\frac{\partial S}{\partial P}\right)_T$ equals :
A) $\left(\frac{\partial V}{\partial T}\right)_V$ B) $-\left(\frac{\partial T}{\partial V}\right)_S$ C) $-\left(\frac{\partial V}{\partial T}\right)_P$ D) $\left(\frac{\partial P}{\partial T}\right)_V$

12. Which one of the following are the substitutes for pressure and concentration to explain the behaviour of real gas and non-ideal solution :
A) activity coefficient and activity
B) activity and fugacity
C) fugacity and activity coefficient
D) fugacity and activity

13. Ionic strength of 0.2 molal $BaCl_2$ is :
A) μ = 0.4 B) 0.8 C) 0.6 D) 0.2

14. The root mean square velocity of H_2 molecule at 273 K is :
A) 1840 ms^{-1} B) 184.2 ms^{-1}
C) 840 ms^{-1} D) 18.40 ms^{-1}

15. Which of the following equation is obtained by the replacement of universal constants like R, π, k, h and N?
A) Stokes - Einstein
B) Sackur- Tetrode equation
C) Stark Einstein equation
D) Stokes equation

16. Conflict between two negative goals is :
A) Avoidance - Avoidance
B) Avoidance - Approach
C) Approach - Approach
D) None of the above

17. The Goal of Educational Innovation is :
A) Positive Change in Learning
B) Negative Change in Learning
C) Never Change in Learning
D) Both (A) and (B)

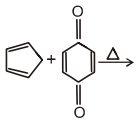
18. Which Ashram presents "Ideal of Human Unity"?
A) Ramakrishna Mission
B) Vivekananda Ashram
C) Sri Aurobindo Ashram
D) Gandhiji Ashram

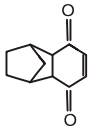
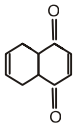
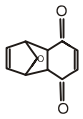
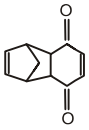
19. Who first advocated that "Women are equal to men" in Education?
A) Vivekanandar B) Rousseau
C) Gandhiji D) Dayananda Saraswati

20. The preamble of the Indian constitution describes one of the principles as follows :
A) Equality B) Monarchi
C) Differentiate D) Isolation

21. Birch reduction of pyridine gives :
A) 1. 2 - dihydropyridine
B) 1, 4 - dihydropyridine
C) piperidine
D) 1, 2, 3, 6 - tetrahydropyridine

22. Which is the product formed in the following reaction?



A)  B)  C)  D) 

23. Ea of a reaction is zero, k is equal to : (A is the frequency factor)?
A) zero B) infinity C) $\mathring{A}$ D) A-1

24. For the set of reactions,

(i) $A + B \underset{k_{-1}}{\overset{k_1}{\rightleftharpoons}} C$

(ii) $C + B \xrightarrow{k_2} D$, $K_1 [A] [B] - k_{-1} [C] - k_2 [C] [B]$ **is equal to :**
A) $d[C]/dt$ B) $-d[A]/dt$
C) $d[D]/dt$ D) $-d[B]/dt$

25. Bronsted equation is :
A) $Ka = GaKa^{\alpha}$ B) $Ga = Ka.Ka^{\beta}$
C) $Ka \neq GaKa^{\alpha}$ D) $Ga \neq Ka.Ka^{\beta}$

26. What minimum tube voltage would be required to excite the K_β and L_β series of lines of uranium?
A) 3.59 and no line B) 67.4 and 9.67
C) 15 and 1.75 D) 112 and 17.2

27. Which of the following solvents have maximum eluting power?
A) water B) acetone
C) chloroform D) methanol

28. The potential corresponding to half the current in the polarogram is called as :
A) one fourth of the potential
B) half-wave potential
C) one and half potential
D) limiting potential

29. In the nuclear reaction $^1_0n \rightarrow ^1_1P + X$ what is X?
A) γ - rays B) H^+
C) $^0_{-1}e$ D) $^0_{+1}e$

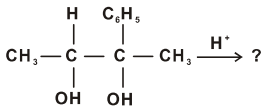
30. The emission of γ-rays results :
A) decrease in energy of the nucleus
B) increase in atomic number of nucleus
C) decrease in charge of nucleus
D) decrease in atomic number of nucleus

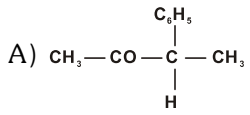
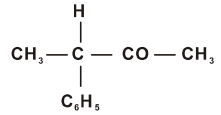
31. Which of the following is aromatic?
A) cyclopentadienyl cation
B) [12] annulene
C) cyclopentadienyl anion
D) cyclopentadiene

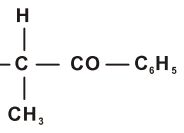
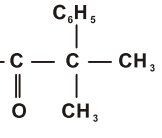
32. Which of the following undergo electrophilic substitution more readily?
A) Nitrobenzene B) Furan
C) Pyridine D) Tropylium cation

33. Mono nitration of aniline in strong acids give :
A) m-nitroaniline B) p-nitroaniline
C) o-nitroaniline D) benzene diazonium salt

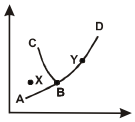
34. The mechanism of the reaction chlorobenzene + $NaNH_2 \xrightarrow{\text{liq. } NH_3}$ aniline is :
A) aromatic bimolecular nucleophilic substitution
B) aromatic unimolecular nucleophilic substitution
C) elimination addition reaction
D) aromatic electrophilic substitution

35. Which of the following product is formed in the reaction 

A)  B) 

C)  D) 

36. The phase diagram for a one - component system is shown below :



What are the number of degree of freedom at the points B, X and Y respectively?
A) 0, 1 and 2 B) 1, 0 and 2
C) 2, 0 and 1 D) 0, 2 and 1

37. Mixture of water and two salts like $(NH_4)_2SO_4$ and NH_4Cl is an example for :
A) Three component system
B) Two component system
C) One component system
D) Zero component system

38. Among the following detectors which is not the common detector for HPLC?
A) FTIR B) light scattering
C) photoionization D) phosphorescence

39. DTA and TGA techniques are useful for :
A) decomposition and oxidation
B) reduction and hydrolysis
C) reduction and oxidation
D) decomposition and reduction

40. The term fractional crystallinity is related with :
A) ΔH and ΔG
B) ΔE and ΔS
C) ΔH_f sample and ΔH_f crystal
D) ΔE sample and ΔH crystal

41. Which one of the following nuclear reaction produces stellar energy?
A) ${}_1^2H + {}_1^3H \rightarrow {}_2^4He + {}_0^1n +$ energy
B) ${}_1^1H \rightarrow {}_2^4He + 2{}_1^0e +$ energy
C) ${}_1^2H \rightarrow {}_2^4He$
D) ${}_1^3H \rightarrow {}_1^2H + {}_0^1n$

42. Carbon-14 dacays with emission of .....
A) α-particle B) β-particle
C) γ-particle D) All the above

43. Which of the following radioisotope used in agriculture?
A) ^{17}O B) ^{24}Na C) ^{59}Fe D) ^{32}P

44. The organometallic compound is used in OXO procress :
A) $[HCo(CO)_4]$ B) $[Pt(Et)Cl_3]^-$
C) $Mo(Et)_3NO$) D) $[Rh Cl(PPh_3)]$

45. Wilkinson's catalyst used in .....
A) Reduction of alkenes
B) Oxidation of alkenes
C) Hydrogenation of alkenes
D) Ozonolysis of alkenes

46. Which of the following pair used to prepare Ziegler Natta catalyst?
A) $Et_3Al + TiCl_4$ B) $Et_2Al + TiCl_4$
C) $Et_3Al + TiCl_3$ D) $Et_3Al + TiCl_2$

47. Which of the following statements on ferrocene is incorrect?
A) Ferrocene is diamagnetic
B) Diplolemoment is zero
C) Obtained when C_5H_5 and reduced iron heated at 300° C
D) Synthesised from C_5H_5MgBr and $FeCl_3$

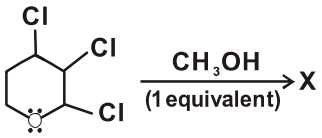
48. If half life period is 100 years, average life is nearly :
A) 70 years B) 90 years
C) 100 years D) 144 years

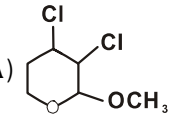
49. For H_3PO_3 ^{31}P NMR spectrum shows a :
A) Quartet B) Quintet
C) Doublet D) Singlet

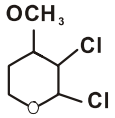
50. Which among the following microstates are possible for Cr^{3+} ion?
A) 45 B) 120 C) 180 D) 240

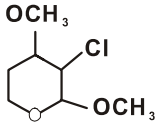
51. Aryl halides are less reactive towards S_N reactions as compared to alkyl halides due to :
A) formation of more stable carbocation
B) resonance stabilization
C) long carbon - halogen bond
D) cannot be predicted

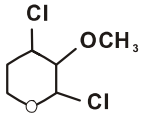
52. In the given reaction, 'X' is :



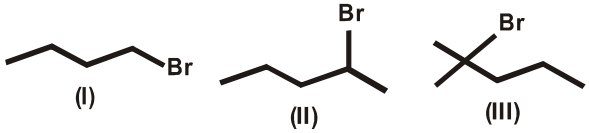
A) 

B) 

C) 

D) 

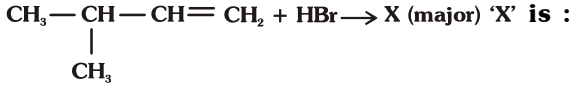
53. Dehydrobromination is in the order for the following compounds :

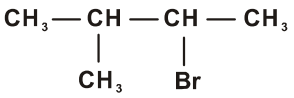


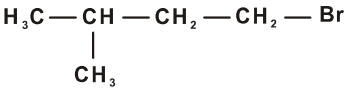
A) (III) > (II) > (I) B) (I) > (II) > (III)
C) (II) > (III) > (I) D) (II) > (I) > (III)

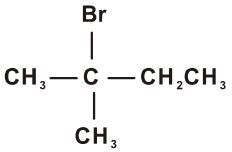
54. Cope reaction is used in the preparation of :
A) alkene B) alkyne
C) alcohol D) aldehyde

55. Which is the major product in the following reaction?



A) 

B) 

C) 

D) None is correct

56. The electrons which contribute to isomer shift in Mossabauer spectroscopy are :
A) s-electron B) p-electron
C) d-electron D) f-electorn

57. The molecule which is IR inactive but Raman active :
A) HCl B) N_2 C) SO_2 D) Protein

58. The increase in rotational energy shows, absorption spectrum in .....
A) IR region B) UV region
C) visible region D) microwave region

59. The frequency of UV radiation is greater than :
A) IR B) microwave
C) both (A) and (B) D) visible region

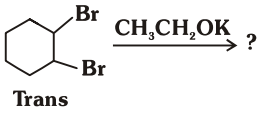
60. Which of the following diatomic molecules will not give a rotational spectrum?
A) CO B) N_2 C) NO D) HF

61. Which among the following alkynes will give aldehyde on hydroboration oxidation reaction?
A) CH_3 - C ≡ C - H B) CH_3 - CH_2 - C ≡ C - H
C) HC ≡ CH D) All the three

62. Which of the following reagent when treated with alkene gives a diol?
A) OsO_4 B) HIO_4
C) $(CH_3COO)_4Pb$ D) All the three

63. When an alkene reacts with peracid, the product is :
A) alkane B) alkyne
C) epoxide D) ester

64. The most probable product in the following reaction is :



Trans

A)  B)  C)  D) 

65. Fischer indole synthesis involves the reaction between :
A) hydrazine and pyruvic acid
B) O-nitrotoluene and diethyl oxalate
C) phenyl hydrazine and pyruvic acid
D) O-toludine and formic acid

66. When excess of sodium is burnt in chlorine we get .....
A) blue NaCl B) yellow NaCl
C) white NaCl D) green NaCl

67. Which one of the following is not p-type non-stoichiometric semiconductors?
A) FeO B) Cu_2O C) NiO D) CdS

68. Ruby laser is obtained when some aluminium ions of Al_2O_3 are replaced by :
A) Cr^{3+} B) V^{2+} C) Mn^{2+} D) Cr^{6+}

69. Ferromagnetism of metals is lost at .....
A) Critical temperature B) Curie temperature
C) Transition temperature D) Eutectic temperature

70. Which one of the following effects is shown by super conductors?
A) Meissner B) Trans
C) Cotton D) Polar

71. What is the wave length of electron wave determined by Davisson and Germer experiment?
A) 165 Å B) 0.165 Å C) 1.65 Å D) 16.5 Å

72. How many degenerate energy present in $E=9h^2/8mL^2$?
A) 9 B) 8 C) 6 D) 3

73. Which one is quantum mechanical operator to x-component of kinetic energy (τ_x)?

A) $\frac{-h^2}{8\pi^2 m}\frac{\partial^2}{\partial n^2}$ B) $\frac{h}{2\pi i}\nabla$

C) $\frac{-h^2}{8\pi^2 m}\nabla^2 + V$ D) $\frac{-h^2}{8\pi^2 m}\nabla^2$

74. What is the angular momentum value if l = 1 and m = -1?

A) $\left(\frac{3}{8\pi}\right)^{1/2}\sin\theta.e^{-i\phi}$ B) $-\left(\frac{3}{8\pi}\right)^{1/2}\sin\theta.e^{i\phi}$

C) $\left(\frac{3}{4\pi}\right)^{1/2}.\cos\theta$ D) $\left(\frac{3}{4\pi}\right)^{1/2}.\sin\theta$

75. Which one is Hamiltonian operator for a helium atom by perturbation method?

A) $\frac{-h^2}{8\pi^2 m}\frac{d^2}{dn^2}$

B) $\frac{-h^2}{8\pi^2 m}\nabla_1^2\frac{-e^2}{r_1}$

C) $\frac{-h^2}{8\pi^2 m}\left[\hat{\nabla}_1^2+\hat{\nabla}_2^2\right]\frac{-e^2}{r_1}\frac{-e^2}{r_2}\frac{+e^2}{r_{12}}$

D) $\frac{-h^2}{8\pi^2 m}\nabla_2^2\frac{-e^2}{r_2}$

76. Role of the Teacher in child-centred Education :
A) Motivate children to learn
B) Provide a suitable environment
C) Become active member of the group
D) All of these

77. Joyful Learning is based on the principles of Pedagogy which are entirely based on :
A) Activity - based learning
B) Child - centred learning
C) Examination - centred learning
D) Both (A) and (B)

78. Who is the founder of the Community School viewing the publication of 'The Village College'?
A) Ivan Illich B) Henry Morris
C) John Dewey D) Mahatma Gandhi

79. The Sainik Schools are a system of schools in India Conceived in 1961 by :
A) A.K. Krishna Menon B) J.K. Krishna Menon
C) S.K. Krishna Menon D) V.K. Krishna Menon

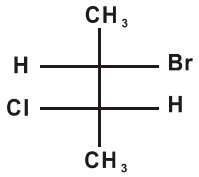
80. Which Institute is the producer of Educational Television Programme for young children between 5 and 11 year age group?
A) Central Institute of Educational Technology, New Delhi
B) Central Institute of Educational Technology, Karnataka
C) Central Institute of Educational Technology, Andhra Pradesh
D) Central Institute of Educational Technology, Tamil Nadu

81. Which one of the following is a complex cation?
A) Hexa cyano ferrate (III) ion
B) Hexammine chromium (III) nitrate
C) Hexa cyano ferrate (II) ion
D) Hexachloro cobaltate (III) ion

82. The structure of $[Co(NH_3)_6]^{3+}$ is .....
A) Square Planar B) Tetrahedral
C) Octahedral D) Triangular

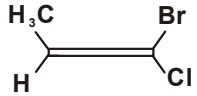
83. The correct sequence of groups in assigning R, S - configuration in :
A) NH_2, CH_3, COOH, H B) COOH, NH_2. CH_3, H
C) NH_2, COOH, CH_3, H D) CH_3, NH_2, COOH, H

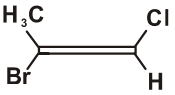
84. The configuration of the chiral centres of the given compound is

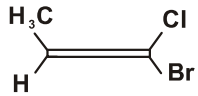


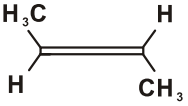
A) 2S, 3R B) 2S, 3S C) 2R, 3R D) 2R, 3S

85. Which one of the following is an 'Z' - isomer?

A) 

B) 

C) 

D) 

86. The committee that suggested a system of multi purpose education at the secondary stage was :
A) Ramamurthi Committee
B) Tarachand Committee
C) Hunters Committee
D) Hartog Committee

87. By the constitutional amendment of ..... 'Education' was placed on the concurrent list
A) 1974 B) 1975 C) 1976 D) 1977

88. "No child below the age of 14 years shall be employed to work ...." is mentioned in ..... of Indian constitution
A) Article 23 B) Article 45
C) Article 30 D) Article 45 (A)

89. NCERT in it's publication documents on, 'Social, Moral and Spiritual values in Education (1979') has drawn up ..... values to be inculcated through education
A) 90 B) 84 C) 45 D) 36

90. Manpower planning is highly influenced by the pattern of .....
A) Exportation B) Importation
C) Deportation D) Migration

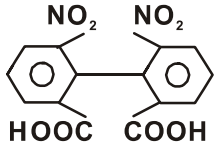
91. ..... developed his theory of identical elements to explain transfer of learning
A) Pavlov B) Guthire
C) Woodworth D) Thorndike

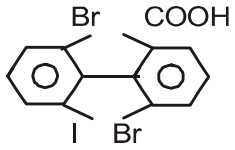
92. ..... involves higher order cognition in the interpretation of sensory information
A) Illusion B) Perception
C) Sensation D) Hallucination

93. I. Problem solving ability improves with age
II. This improves in terms of both speed and accuracy.
A) I is correct, II is wrong B) I and II are wrong
C) II is correct, I is wrong D) I and II are correct

94. Trial and Error theory was given by :
A) Ivan Pavlov B) Edward L. Thorndike
C) Skinner D) Hull

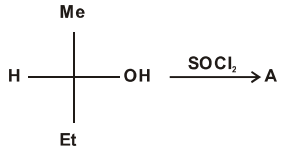
95. Ebbinghaus experiment is related to :
A) Curve of memory B) Curve of forgetting
C) Curve of learning D) None of the above

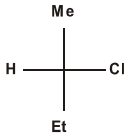
96. Which of the following is not asymmetric compound?
A) $H_3C\ CH = C = C\ (CH_3)_2$
B) $H_3C\ CH = C = CH\ CH_3$
C) 

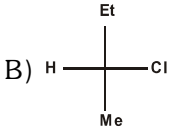
D) 

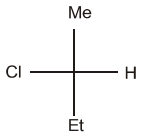
97. Conformation of decalins are .....
A) Cis - decalin B) Trans - decalin
C) Cis and Trans decalins D) Cis - Cis decalins

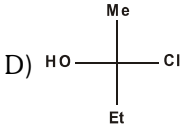
98. Which of the following conformation of cyclohexane is the most stable?
A) Chair form B) Boat form
C) Half-Chair form D) Twist-boat form

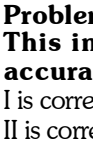
99. In the given reaction, product 'A' is :


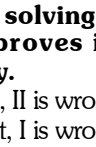
A) 

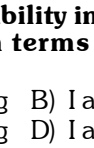
B) 

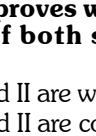
C) 

D) 

100. Which of the following compounds will be least reactive to S_N^1 reaction :
A) 

B) 

C) 

D) 

101. Choose the symmetry operations for NH_3 molecule :
A) E, $2C_\alpha$, $\alpha\ C_2$ B) E, $2C_3$, $3\ \sigma_v$
C) E, $4C_3$, $3\ C_2$ D) E, C_3, σ_v

102. What is the selection rule for rotational Raman spectroscopy?
A) ± 1 B) ± 1 and ± 2
C) $\pm\ 2$ D) 0

103. Choose the delocalization energy for trans-1, 3-butadiene using Huckel Mo Theory :
A) 0.472 β B) 4.472 β
C) 4 α + 4 β D) 4 α + 4.472 β

104. Third law of thermodynamics implies that :
A) $S_{\lim T \to 0 \neq 0}$ B) $S_{\lim T \to 0 = 0}$ C) $S_{\lim T \to 0 > 0}$ D) $S_{\lim T \to 0 < 0}$

105. The chemical potential of i^{th} component of a mixture is :
A) $\mu_i = \left(\frac{\partial G}{\partial n_i}\right)_{T,P,nj}$ B) $\mu_i = \left(\frac{\partial S}{\partial n_i}\right)_{T,P,nj}$
C) $\mu_i = \left(\frac{\partial T}{\partial n_i}\right)_{G,P,nj}$ D) $\mu_i = \left(\frac{\partial P}{\partial n_i}\right)_{S,T,nj}$

106. The General order of solubility of halides in liquid ammonia is :
A) $I^- > Br^- > F^-$ B) $I^- > F^- > Br^-$
C) $F^- > Br^- > I^-$ D) $Br^- > F^- > I^-$

107. Ammonium chloride in liquid ammonia will act as a/an :
A) acid B) base
C) salt D) double salt

108. Bond order in CO is :
A) 2 B) 2.5 C) 1.5 D) 3

109. According to band theory of bonding, conduction occurs in very good conductors because :
A) Valence band is full
B) Valence band and conduction band overlap
C) Band gap is appreciable
D) Band gap is small

110. Which one of the following defect increases the dielectric constant of the material?
A) Frenkel B) Schottky
C) Both (A) and (B) D) None of the above

111. The general assembly of the UNO proclaimed 1974 as the .....
A) World Integration Year
B) World Environment Year
C) World Population Year
D) World Education Year

112. Learner Controlled Instruction (LCI) was developed by .....
A) Robert Mager B) B.F. Skinner
C) Sydney L. Pressey D) Norman A. Cowder

113. In the 19th Century the research by ..... proclaims that in Bengal state of the 5 lakh population only 4 women were literates
A) Chatterji B) Rockfeller
C) Adiseshaiah D) Adam Smith

114. 'Book illusion' is a figural illustration representing which one of the following :
A) Split attention B) Span of attention
C) Division of attention D) Fluctuation of attention

115. 'Principle of Hedonism' in Emotional develop ment is a concept that concentrates on :
A) Pleasant B) Maturity
C) Pedagogy D) Achievement

116. Increase in temperature and pH changes of protein causes :
A) peptide formation B) thermal decomposition
C) polymerisation D) denaturation

117. The mean ionic activity coefficient of a 0.1 molal uni-univalent electrolyte in water at 25° C is :
A) 0.755 B) 7.55 C) 0.0755 D) 75.5

118. The standard reduction potentials for the reactions :
$Sn^{2+} + 2e^- \rightarrow Sn$, $Sn^{4+} + 2e^- \rightarrow Sn^{2+}$ **are :**
A) 0.136 V and–0.15 V B) -0.136 V and 0.15 V
C) 1.36 V and 1.5 V D) 13.6 V and 0.015 V

119. The polarisation for nonpolar molecules like H_2, O_2, CH_4 etc. is :
A) directly proportional to temperature
B) independent of temperature
C) dependent of temperature alone
D) inversely proportional to temperture

120. Langmuir Isotherm explains :
A) Absorption B) Emission
C) Adsorption D) Transition

121. The third Indian National Congress (1887) Conference was held in :
A) Delhi B) Bombay
C) Chennai D) Calcutta

122. Who is popularly known as "Gangaikonda Cholan"?
A) Paranthaka I B) Rajaraja I
C) Rajaraja II D) Rajendra I

123. Who won the Man of the Series title in 2013 ICC Champions trophy Cricket league?
A) M.S. Dhoni B) Virat Kohli
C) Shikhar Dhawan D) Ravindra Jadeja

124. The article which provides special status to the state Jammu and Kashmir :
A) Article 340 B) Article 360
C) Article 370 D) Article 390

125. NCTE Stands for :
A) National Council for Technical Education
B) National Centre for Teacher Education
C) National Council for Teacher Education
D) National Centre for Technical Education

126. The MB spectra of Na_2 [Fe (CN)$_6$ NO] complex is doublet, because of the presence of :
A) Weak σ - bond B) Extensive σ - bond
C) Weak π - bond D) Extensive π - bond

127. The complex ion with maximum CFSE is :
A) $[Co(NH_3)_6]^{3+}$ B) $[Mn(H_2O)_6]^{2+}$
C) $[Co(CNS)_4]^{2-}$ D) $[CoF_6]^{3-}$

128. CrO_4^{2-} ion is intensely yellow coloured since the transition is :
A) Spin allowed
B) Laporte allowed
C) Charge transfer
D) Spin and Laporte forbidden

129. A Jahn-Teller distortion of $[Ti(H_2O)_6]^{3+}$ leads to :
A) raise its symmetry
B) loss of H_2O ligand
C) reduction of metal to T_i0
D) remove an electronic degeneracy

130. What is the g-value for methyl radical shows ESR at 3000 Gauss in a spectrometer operating at 9.23×10^9 Hz?
A) 2.0023 B) 2.0047 C) 2.0069 D) 2.0000

131. Who wrote 'The God of Small Things'?
A) Arundhati Roy B) Salman Rushdie
C) R.K. Narayanan D) K.R. Narayanan

132. When sodium chloride is added to water, the solution boils :
A) exactly at 100° C B) above 100° C
C) below 100° C D) at 0° C

133. NH 7 Connects :
A) Delhi to Kanyakumari
B) Kashmir to Kanyakumari
C) Agra to Kanyakumari
D) Varanasi to Kanyakumari

134. The youngest nominee for the noble peace prize who was popularly known for women's education rights :
A) Nur-ul-fatima B) Malala
C) Yasmin D) Nur-ul-faritha

135. The East India Company of England got permission to trade in India during the period of :
A) Shajahan B) Jahangir
C) Bahadur Shah D) Aurangzeb

136. The electron affinity of the following elements can be arranged :
A) Cl > O > C > N B) Cl > O > N > C
C) Cl > N > C > O D) Cl > C > O > N

137. Which of the following species has lowest ionisation potential?
A) O B) O_2 C) O_2^+ D) O_2^-

138. The polarity in H - X bond is in the following order :
A) HF > HBr > HCI > HI
B) HF > HCl > HBr > HI
C) HF > HI > HCI > HBr
D) HF > HBr > HI > HCI

139. Choose the correct order of bond energies in the following series :
A) C = O > O = O > C - O
B) C = O > C - O > O = O
C) C - O > O = O > C = O
D) O = O > C - O > C = O

140. Which of the following favours high lattice energy in ionic compounds?
A) Small ion, low charge
B) Small ion, high charge
C) Large ion, high charge
D) Large ion, low charge

141. Vinyl type compounds usually undergo,
A) chain polymerisation
B) step polymerisation
C) condensation polymerisation
D) cross linked polymerisation

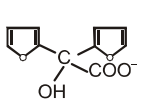
142. Which of the following functional group present in epoxy resin?
A) Polyester B) Polyamide
C) Polyether D) Polyamine

143. At what temperature, polyvinyl chloride is pre pared from acetylene and hydrochloric acid?
A) 250° C B) 450° C C) 350° C D) 150° C

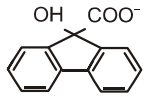
144. The reaction of ammonium chloride with BCl_3 at 140° C followed $NaBH_4$ gives product X. The product of X is :
A) $B_3N_3H_3$ B) $B_3N_3H_6$ C) $B_3N_3H_{12}$ D) $B_3N_4H_3$

145. The molecular formula of monomeric phosphazene is :
A) PNCl B) $P_3N_3Cl_6$ C) $PNCl_3$ D) $PNCl_2$

146. Furil $\xrightarrow{KOH}$? ?

A) 

B) $(C_6H_5)_2C(OH)COO^-$

C) 

D) Citric acid

147. Curtius rearrangement is :

A) $RCON_3 \xrightarrow{\Delta}$ isocyanate $\xrightarrow{H_2O} RNH_2$

B) $RCOOH + HN_3 \xrightarrow{H_2SO_4} RNH_2 + CO_2 + N_2$

C) $R-\overset{O}{\overset{\|}{C}}-NHOH \xrightarrow{OH^-} RNH_2$

D) Hydrazobenzene $\xrightarrow{H_2SO_4}$ benzidine

148. α naphthyl allyl ether $\xrightarrow[\Delta]{200^\circ C}$?
A) 4 - allyl - 1 - naphthol B) 2 - allyl - 1 naphthol
C) 1 - allyl - 2 - naphthol D) 8 - allyl - 1 - naphthol

149. Trans - 3, 4 - dimethylcyclobutene $\xrightarrow{\Delta}$?
A) cis, cis-2, 4-hexadiene
B) cis, trans-2 4-hexadiene
C) trans, trans-2, 4-hexadiene
D) mixture of the cis, cis and trans, trans-2, 4-hexadiene

150. Fries rearrangement is the conversion of :
A) phenyl allyl ether to o-allyl phenol
B) hydrazobenzene to benzidine
C) 1, 2-glycols to ketone or aldehyde in the presence of acids
D) aryl esters to o and p-hydroxy ketones in the presence of Lewis acids

POST GRADUATE ASSISTANTS (2012-2013) - CHEMISTRY - ANSWERS

1 ..... A	2 ..... B	3 ..... B	4 ..... B	5 ..... A	6 C	7 ..... D	8 ..... D	9 ..... B	10 ..... A
11 C	12 ..... D	13 C	14 ..... A	15 ..... B	16 ..... A	17 ..... A	18 C	19 ..... B	20 ..... A
21 ..... B	22 ..... D	23 C	24 ..... A	25 ..... A	26 ..... D	27 ..... A	28 ..... B	29 C	30 ..... A
31 C	32 ..... B	33 ..... A	34 C	35 ..... A	36 ..... D	37 ..... A	38 ..... D	39 ..... A	40 C
41 ..... B	42 ..... A	43 ..... D	44 ..... A	45 C	46 ..... A	47 C	48 ..... D	49 C	50 ..... B
51 ..... B	52 ..... A	53 ..... A	54 ..... A	55 C	56 ..... A	57 ..... B	58 ..... D	59 C	60 ..... B
61 ..... D	62 ..... D	63 C	64 C	65 C	66 ..... B	67 ..... D	68 ..... A	69 ..... B	70 ..... A
71 C	72 ..... D	73 ..... A	74 ..... A	75 C	76 ..... D	77 ..... D	78 ..... B	79 ..... D	80 ..... A
81 ..... B	82 C	83 C	84 ..... B	85 ..... A	86 ..... B	87 C	88 ..... A	89 ..... B	90 ..... D
91 ..... D	92 ..... B	93 ..... D	94 ..... B	95 ..... B	96 ..... B	97 C	98 ..... A	99 ..... A	100 ..... D
101 ..... B	102 C	103 ..... A	104 ..... B	105 ..... A	106 ..... A	107 ..... A	108 ..... D	109 ..... B	110 ..... A
111 C	112 ..... A	113 ..... D	114 ..... D	115 ..... A	116 ..... D	117 ..... A	118 ..... B	119 ..... B	120 C
121 C	122 ..... D	123 C	124 C	125 C	126 ..... D	127 ..... A	128 C	129 ..... D	130 ..... B
131 ..... A	132 ..... B	133 ..... D	134 ..... B	135 ..... B	136 ..... A	137 ..... D	138 ..... B	139 ..... A	140 ..... B
141 ..... A	142 C	143 ..... D	144 ..... B	145 ..... D	146 ..... A	147 ..... A	148 ..... B	149 C	150 ..... D