PREVIOUS YEAR PAPER

UPPSC GIC Lecturer 2025 Prelims — Chemistry (TUKU-06)

UPPSC GIC Lecturer

64 of the paper's 120 questions · +2.5 for a correct answer, −0.83 for a wrong one · 120 minutes

Left out of the original paper: 56 (any question that needs a figure, a symbol or formatting we cannot show, or whose text did not read back cleanly from the booklet).

The official booklet is a scan with no text; ExamBharo typed this paper from it by hand. Report a typing slip through exambharo.com/contact/.

Questions from the Uttar Pradesh Public Service Commission's paper. Each question is followed by its answer, and the answer key is repeated on the last page.

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Chemistry

41. Which of the following is NOT a fat soluble vitamin?
    (a) Vitamin - C
    (b) Vitamin - D
    (c) Vitamin - K
    (d) Vitamin - A
    Answer: (a)

42. If the van't Hoff factor for a solution of barium ate is 2.09, then degree of dissociation will be
    (a) 1.55
    (b) 0.91
    (c) 0.55
    (d) 0
    Answer: (c)

43. Which property will remain unchanged even if the system is split into two halves?
    (a) Pressure
    (b) Mass
    (c) Enthalpy
    (d) Entropy
    Answer: (a)

44. The IUPAC name of [CO(en)2Cl(ONO)]+ is
    (a) Nitro diethylene diamine chloro cobalt (II)
    (b) Chlorobis (ethylene diamine) nitrito cobalt (III) ion
    (c) Bis (diethylene amine) chloronitro cobaltate (II)
    (d) Diethyl amine chlorobis cobalt (III)
    Answer: (b)

45. Which of the following spectral line for hydrogen atom is in visible region?
    (a) Balmer
    (b) Paschen
    (c) Pfund
    (d) Lyman
    Answer: (a)

46. Which one of the following is NOT a protein?
    (a) Horn
    (b) Wool
    (c) DNA
    (d) Feathers
    Answer: (c)

47. Which of the following pairs is NOT correctly matched in view of geometry?
    (a) ClF3 - T-shaped
    (b) BrF5 - Trigonal pyramidal
    (c) IF7 - Pentagonal bipyramidal
    (d) BrF - Linear
    Answer: (b)

48. Which is called animal starch?
    (a) Glycogen
    (b) Maltose
    (c) Charcoal
    (d) Cellulose
    Answer: (a)

49. Cyclic ethers with three membered ring are called
    (a) Oxiranes
    (b) Alkoxides
    (c) Epoxy resins
    (d) Lactones
    Answer: (a)

50. Which of the following is used as a tranquilizer drug?
    (a) Terfenadine
    (b) Valium
    (c) Penicillin
    (d) Naproxen
    Answer: (b)

51. According to Hardy-Schulze rule, the coagulating power of cations follows which of the following orders for a negative sol?

(a) $Al^{3+} > Ba^{2+} > Na+$

(b) $Ba^{2+} > Al^{3+} > Na+$

(c) $Al^{3+} = Ba^{2+} = Na+$

(d) $Na+ > Ba^{2+} > Al^{3+}$

Answer: (a)

53. What is the coordination number of an atom in bcc unit cell?

(a) 6

(b) 7

(c) 8

(d) 5

Answer: (c)

54. Which of the following has highest tendency to donate electrons?

(a) Na

(b) Ca

(c) Mg

(d) K

Answer: (d)

55. Given below are two statements, one is labelled as Assertion (A) and other as Reason (R).
Assertion (A): Viscosity of a liquid decreases with increase in temperature.
Reason (R): The average thermal energy of molecules of a liquid is increased with increase in temperature and hence intermolecular attraction is increased.
Select the correct answer using the code given below.

(a) Both (A) and (R) are true and (R) is correct explanation of (A)

(b) (A) is true but (R) is false

(c) (A) is false but (R) is true

(d) Both (A) and (R) are true but (R) is not correct explanation of (A)

Answer: (b)

58. In which rearrangement reaction, intermediate is carbene?

(a) Stevens reaction

(b) Wolff reaction

(c) Wagner-Meerwein reaction

(d) Pinacol-Pinacolone reaction

Answer: (b)

59. Which class of synthetic detergents is used in hair conditioners?
(a) Cationic detergents
(b) Anionic detergents
(c) Non ionic detergents
(d) None of the above
Answer: (a)

60. Calculate the solubility of PbI2 in water at 25°C, which is 90% dissociated. (Ksp of PbI2 = 1.39 × 10−8 at 25°C)
(a) 2.68 × 10^{-3} mole/litre
(b) 1.68 × 10^{-3} mole/litre
(c) 5.00 × 10^{-3} mole/litre
(d) 1.86 × 10^{-3} mole/litre
Answer: (b)

61. Which of the following is NOT a colligative property?
(a) Osmotic pressure
(b) Elevation of boiling point
(c) Freezing point
(d) Lowering of vapour pressure
Answer: (c)

65. According to VSEPR theory, the approximate sha of SOF4 will be
(a) Square Pyramidal
(b) Trigonal bipyramidal
(c) Irregular tetrahedral
(d) Octahedral
Answer: (b)

66. The effective atomic number of central metal ion in [CO(en)2Cl2]Cl is
(a) 35
(b) 50
(c) 86
(d) 36
Answer: (d)

67. Match List-I with List-II and choose the correct answer using the code given below the lists.
List-I - List-II
A. Joule Thomson Experiment - 1. Reversible process
B. Carnot cycle - 2. Enthalpy of a reaction
C. Hess's Law - 3. Molar enthalpy of phase transition
D. Clausius-Clapeyron equation - 4. Isoenthalpic process

(a) 4 1 3 2
(b) 4 1 2 3
(c) 3 1 2 4
(d) 3 2 1 4

Answer: (b)

68. Which of the following polymer is formed on heating caprolactam with water at high temperature?

(a) Nylon-6
(b) Teflon
(c) Bakelite
(d) Nylon-6, 6

Answer: (a)

69. Which of the following acids has three ionisable hydrogen?

(a) Hypophosphoric acid
(b) Pyrophosphoric acid
(c) Metaphosphoric acid
(d) Iso hypophosphoric acid

Answer: (d)

71. The total number of orbitals associated with principal quantum number-3 (n = 3) is

(a) 7
(b) 8
(c) 9
(d) 6

Answer: (c)

72. The acidified permanganate solution oxidises oxalates ions into

(a) carbon dioxide
(b) acetic acid
(c) acetylene gas
(d) carbonates

Answer: (a)

73. Arrange the following polymers in increasing order of their intermolecular forces.
Nylon-6, 6, Buna-S, Polythene

(a) Buna-S < Polythene < Nylon-6, 6

(b) Polythene < Buna-S < Nylon-6, 6

(c) Buna-S < Nylon-6, 6 < Polythene

(d) Nylon-6, 6 < Polythene < Buna-S

Answer: (a)

75. Which of the following is the correct order of increasing bond order?

(a) $O_2^+ < O_2^- < O_2 < O_2^{2-}$

(b) $O_2^{2-} < O_2^- < O_2 < O_2^+$

(c) $O_2^+ < O_2^{2-} < O_2^- < O_2$

(d) $O_2^{2-} < O_2 < O_2^+ < O_2^-$

Answer: (b)

76. Which of the following is NOT a mixed organometallic compound?

(a) $(C_4H_9)_2SnCl_2$

(b) $C_6H_5SbO(OH)_2$

(c) $C_2H_5HgC_4H_9$

(d) C_2H_5MgBr

Answer: (c)

77. The bond order of NO molecule is

(a) 3.0

(b) 2.5

(c) 2.0

(d) 1.5

Answer: (b)

78. Which of the following is C-2 epimer of D-ribose?

(a) D-idose

(b) D-talose

(c) D-manose

(d) D-arabinose

Answer: (d)

79. Which of the following is NOT an artificial sweetener?

(a) Saccharin

(b) Sucralose

(c) Stevia

(d) Aspartame

Answer: (c)

80. Match List-I with List-II and choose the correct answer using the code given below the lists.
List-I (Vitamin) - List-II (Deficiency disease)
A. A - 1. Scurvy
B. B1 - 2. Night blindness
C. B12 - 3. Beri-Beri
D. C - 4. Pernicious anaemia

(a) 2 4 3 1
(b) 2 1 4 3
(c) 1 2 3 4
(d) 2 3 4 1

Answer: (d)

81. The solubility product of AgCl is 1.0×10^{-10}. The solubility of AgCl in mol/L is

(a) 2×10^{-5}
(b) 1×10^{-4}
(c) 2×10^{-4}
(d) 1×10^{-5}

Answer: (d)

82. Which of the following is tridentate ligand?

(a) Diethylene triamine
(b) 2, 2' Dipyridyl
(c) Triethylene tetraamine
(d) Oxalate ion

Answer: (a)

83. Which of the following molecule has highest bond angle?

(a) H_2S
(b) H_2Se
(c) H_2Te
(d) H_2O

Answer: (d)

84. Which one of the following pairs is most stable in +3 oxidation state?

(a) Gd and Lu
(b) Gd and Eu
(c) Pm and Gd
(d) Dy and Lu

Answer: (a)

85. How do the numbers of Schottky and Frenkel defects change in an ionic crystal with increase in temperature?

(a) Increase exponentially
(b) Decrease linearly
(c) Decrease exponentially
(d) Increase linearly

Answer: (a)

86. In which solvent, alpha sulphur is insoluble?

(a) Benzene
(b) Alcohol
(c) Water
(d) Carbon disulphide

Answer: (c)

87. If the rate constant for a first order reaction is $1.54 \times 10^{-3} s^{-1}$, then the half-life time of this reaction is

(a) 400 s
(b) 500 s
(c) 550 s
(d) 450 s

Answer: (d)

88. How many planes of symmetry are present in N crystal?

(a) 3
(b) 8
(c) 7
(d) 9

Answer: (d)

90. The number of optically active isomers of HOCH2(CHOH)4CHO is

(a) 8
(b) 24
(c) 16
(d) 4

Answer: (c)

91. The colligative properties of solutions

(a) do not depend on number of solute particles
(b) do not depend on dissociation of solute in solvent
(c) depend on number of solute particles in solution
(d) depend on nature of solute particles

Answer: (c)

93. The change in reaction rate constant with ionic strength is called

(a) primary salt effect

(b) secondary salt effect

(c) dielectric constant

(d) electrophoretic effect

Answer: (a)

96. Consider the following statements with reference to Bohr's atomic model.
1. Bohr's model is unable to explain the spectrum of atom other than hydrogen.
2. Bohr's model explains the splitting of spectral line in the presence of magnetic field.
Select the correct answer from the code given below.

(a) Both 1 and 2

(b) Only 2

(c) Neither 1 nor 2

(d) Only 1

Answer: (d)

97. Calculate the root mean square velocity of sulphur dioxide gas at 427°C.
(R = 8.314 × 107 ergs/degree/mol)

(a) 4263 ms^{-1}

(b) 52230 cms^{-1}

(c) 46100 ms^{-1}

(d) 48128 cms^{-1}

Answer: (b)

98. In a DNA double helix, Adenine (A) pairs with Thymine (T) via how many hydrogen bonds?

(a) Two

(b) Three

(c) Four

(d) One

Answer: (a)

99. Consider the following statements with reference to glucose.
1. Tollen's reagent can not be used to distinguish between aldose and ketose.
2. Glucose on oxidation with HNO_3 gives glucaric acid.
Select the correct answer from the code given below.

(a) Both 1 and 2

(b) Only 2

(c) Neither 1 nor 2

(d) Only 1

Answer: (a)

100. Which of the following is NOT an intensive variable?

(a) energy

(b) vapour pressure

(c) specific gravity

(d) molar volume

Answer: (a)

102. In the preparation of chlorine trifluoride (ClF3), chlorine reacts with excess of Fluorine at 573 K. However, if equal volume of chlorine and Fluorine react at 437 K; the product formed is

(a) ClF5

(b) ClF

(c) Cl2F2

(d) ClF3

Answer: (b)

103. If adsorption of a gas on a solid increases, which combined change must have occurred?

(a) Temperature decreases, pressure decreases

(b) Temperature increases, pressure increases

(c) Temperature decreases, pressure increases

(d) Temperature increases, pressure decreases

Answer: (c)

104. Which of the following set of quantum number i ot applicable for an electron in an atom?

(a) n = 1, l = 0, ml = 0, ms = + 1/2

(b) n = 1, l = 0, ml = 0, ms = - 1/2

(c) n = 2, l = 0, ml = 0, ms = + 1/2

(d) n = 1, l = 1, ml = 1, ms = + 1/2

Answer: (d)

105. Consider the following statements with reference to crystal defects in solids.
1. Schottky defects arise if some of the lattice points in crystals are unoccupied.
2. Schottky defects appear generally in ionic crystals.
Select the correct answer from the code given below.

(a) Both 1 and 2

(b) Only 2

(c) Neither 1 nor 2

(d) Only 1

Answer: (a)

106. Match List-I with List-II and choose the correct answer using the code given below the lists.
List-I (Molecules) - List-II (Geometry)
A. BeF_2 - 1. Trigonal bipyramidal
B. BF_3 - 2. Linear
C. CH_4 - 3. Trigonal planar
D. PF_5 - 4. Tetrahedral

(a) 2 4 3 1
(b) 4 2 3 1
(c) 2 1 4 3
(d) 2 3 4 1

Answer: (d)

107. Xerophthalmia disease is caused by the deficiency of

(a) Vitamin A
(b) Vitamin C
(c) Vitamin B1
(d) Vitamin D

Answer: (a)

108. Which of the following carbonyl compounds is most reactive towards nucleophilic addition reaction?

(a) HCHO
(b) PhCHO
(c) CH_3CHO
(d) $PhCH_2CHO$

Answer: (a)

109. Methanol is known as

(a) Wood alcohol
(b) Grain alcohol
(c) Denatured alcohol
(d) Rubbing alcohol

Answer: (a)

110. Which of the following gaseous molecule has highest average velocity at 0°C?

(a) He
(b) N_2
(c) O_2
(d) H_2

Answer: (d)

112. A compound with molecular formula C4H10O represents methoxypropane and ethoxyethane. What type of isomerism is this?

(a) Functional isomerism

(b) Chain isomerism

(c) Metamerism

(d) Position isomerism

Answer: (c)

113. Name the type of isomerism exhibited by the following isomers.
[CO³+(NH3)2 (Py)2 (NO2)2]NO3 and [CO³+(NH3)2 (Py)2 (ONO)2]NO3

(a) ionisation isomerism

(b) geometrical isomerism

(c) linkage isomerism

(d) coordination isomerism

Answer: (c)

114. Consider the following statements with reference to ClF3.
1. It has a T-shaped structure.
2. It is used to form gaseous UF6.
Select the correct answer from the code given below.

(a) Both 1 and 2

(b) Only 2

(c) Neither 1 nor 2

(d) Only 1

Answer: (a)

117. How many radial nodes are present in 4s orbital?

(a) 1

(b) 2

(c) 3

(d) 0

Answer: (c)

118. Which one of the following ion pairs is colourless?

(a) Se³+ and Cu+

(b) Se³+ and Mn²+

(c) Ti³+ and Mn³+

(d) Ti³+ and V³+

Answer: (a)

119. Consider the following statements with reference to Lithium (Li).
1. Li is only alkali metal which reacts with nitrogen to give Li_3N.
2. Li_2CO_3 is thermally less stable than other alkali metal carbonates.
Select the correct answer from the code given below.

(a) Both 1 and 2

(b) Only 2

(c) Neither 1 nor 2

(d) Only 1

Answer: (a)

120. Which of the following ion has the lowest mobility in an aqueous solution?

(a) K^+

(b) Li^+

(c) Rb^+

(d) Na^+

Answer: (b)

Answer key

Answer key from the Uttar Pradesh Public Service Commission's official answer key for this sitting. "—" means the key gave none.

Chemistry

41	**(a)**	42	**(c)**	43	**(a)**	44	**(b)**	45	**(a)**	46	**(c)**
47	**(b)**	48	**(a)**	49	**(a)**	50	**(b)**	51	**(a)**	53	**(c)**
54	**(d)**	55	**(b)**	58	**(b)**	59	**(a)**	60	**(b)**	61	**(c)**
65	**(b)**	66	**(d)**	67	**(b)**	68	**(a)**	69	**(d)**	71	**(c)**
72	**(a)**	73	**(a)**	75	**(b)**	76	**(c)**	77	**(b)**	78	**(d)**
79	**(c)**	80	**(d)**	81	**(d)**	82	**(a)**	83	**(d)**	84	**(a)**
85	**(a)**	86	**(c)**	87	**(d)**	88	**(d)**	90	**(c)**	91	**(c)**
93	**(a)**	96	**(d)**	97	**(b)**	98	**(a)**	99	**(a)**	100	**(a)**
102	**(b)**	103	**(c)**	104	**(d)**	105	**(a)**	106	**(d)**	107	**(a)**
108	**(a)**	109	**(a)**	110	**(d)**	112	**(c)**	113	**(c)**	114	**(a)**
117	**(c)**	118	**(a)**	119	**(a)**	120	**(b)**				