

BOOKLET CODE A

Invigilator's Signature

ENTRANCE EXAMINATION-2013


M.Sc. Chemistry

TIME: 2 HOURS

MAXIMUM MARKS: 100

HALL TICKET NUMBER:

INSTRUCTIONS

1. Write your **HALL TICKET NUMBER** and the **BOOKLET CODE** in the space provided  in the **OMR ANSWER SHEET** given to you.
2. Make sure that pages numbered from 1 to 19 are present (excluding pages assigned for rough work).
3. There are 100 questions in this paper. All questions carry equal mark.
4. **There is negative marking. Each wrong answer carries -0.33 mark.**
5. Answers are to be marked on the OMR answer sheet following the instructions provided there upon.
6. Hand over the OMR answer sheet at the end of the examination to the Invigilator.
7. In case of tie, the marks obtained in the first 25 questions (**PART-A**) will be used to determine the order of merit.
8. No additional sheet will be provided. Rough work can be done in the space provided at the end of the booklet.
9. Only non-programmable calculators are allowed.
10. Useful constants are provided on top of PART-A in the question paper.
11. Candidate should ^{write and} **darken** the correct Booklet Code of the question paper in the OMR Answer Sheet, without which such OMR answer sheets cannot be evaluated. The defaulting candidates in marking the Booklet Code in the OMR sheet shall not have any claim on their examination and the University shall not be held responsible for the lapse on the part of the candidate/s.

Booklet code A

Useful Constants:

Rydberg constant = 109737 cm^{-1} ; Faraday constant = 96500 C ; Planck's constant = $6.625 \times 10^{-34} \text{ J s}$;
Speed of light = $2.998 \times 10^8 \text{ m s}^{-1}$; Boltzmann constant = $1.380 \times 10^{-23} \text{ J K}^{-1}$; Gas constant = $8.314 \text{ J K}^{-1} \text{ mol}^{-1}$;
Mass of electron = $9.109 \times 10^{-31} \text{ kg}$; Mass of proton = $1.672 \times 10^{-27} \text{ kg}$; Charge of electron = $1.6 \times 10^{-19} \text{ C}$;
1 D = $3.336 \times 10^{-30} \text{ C m}$; 1 bar = 10^5 N m^{-2} ; $RT/F = 0.059 \text{ V}$

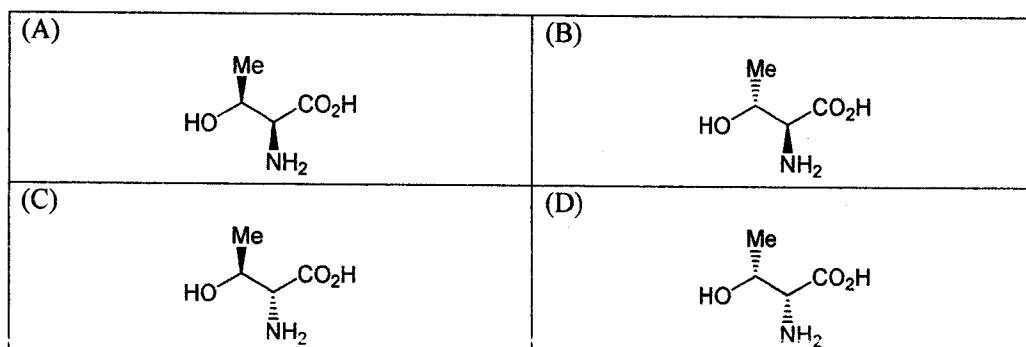
PART-A

1. What will be the pressure at an altitude of 500 miles (1 mile = $1.61 \times 10^5 \text{ cm}$) above the earth in an isothermal condition at 0°C , assuming that the atmosphere consists of 80% N_2 and 20% O_2 by weight?
(A) $3.34 \times 10^{-44} \text{ atm}$ (B) $8.64 \times 10^{-28} \text{ atm}$ (C) 1.43 atm (D) $5.20 \times 10^{-28} \text{ atm}$
2. The van der Waals constant 'b' for a certain gas is $4.42 \times 10^{-2} \text{ L/mol}$. How near can the centers of two molecules approach each other?
(A) 1.636 \AA (B) 3.272 \AA (C) 6.525 \AA (D) 2.134 \AA
3. What will be the molar mass of an ideal gas if the specific heats at constant volume and at constant pressure are 0.015 and 0.025 calories/ $g^\circ\text{C}$, respectively?
(A) 100 g/mol (B) 300 g/mol (C) 200 g/mol (D) 400 g/mol
4. A solution of 10^{-3} M concentration absorbs 10% of incident light when kept in a cell of 1 cm path length. What concentration of the solution will be required to absorb 90% of the light?
(A) 0.012 M (B) 0.022 M (C) 0.052 M (D) 0.5 M
5. The line $y = x$ is rotated clockwise by 15° about the point (1,1). What is the y-intercept of the rotated line?
(A) $1 + \sqrt{3}$ (B) 1 (C) $1 - (1/\sqrt{3})$ (D) $1/\sqrt{3}$
6. There are 10 molecules of A and 10 molecules of B in a container. All binary collisions (collisions of two molecules) are equally likely. What is the probability of the binary collisions between A and B?
(A) $9/20$ (B) $10/19$ (C) $1/2$ (D) $11/20$

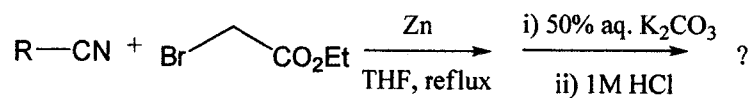
7. If the C-H bond length in methane (CH_4) is 1.0 \AA , what is the H-H distance?
 (A) $\sqrt{8}/\sqrt{3} \text{ \AA}$ (B) $\sqrt{3} \text{ \AA}$ (C) $\sqrt{2}/\sqrt{3} \text{ \AA}$ (D) $\sqrt{2} \text{ \AA}$
8. The (100) X-ray diffraction peak of a cubic crystal occurs at $\theta = 19.50^\circ$. At which of the following angles will the (100) diffraction peak appear if the unit cell length is doubled?
 (A) 19.50° (B) 9.75° (C) 9.61° (D) 9.50°
9. In the following reaction scheme,
- $$\text{A} \xrightleftharpoons[k_2]{k_1} \text{B} \xrightarrow{k_3} \text{C}$$
- which of the following determines the rate of formation of C?
 (A) Only k_3 (B) Only k_1 and k_2 (C) Only k_1 and k_3 (D) $k_1, k_2,$ and k_3
10. Which of the following can be used to evaluate the factorial of a large number?
 (A) Lagrange's mean value theorem (B) Newton's formula
 (C) Stirling's formula (D) Mollweide's formula
11. For all positive numbers x , which of the following is the derivative of the function $\log_b x$?
 (A) $x \log_b e$ (B) $x + \log_b e$ (C) $\log_b e - x$ (D) $(1/x) \log_b e$
12. Which of the following is the functional form of Michaelis-Menten equation in the context of enzyme kinetics?
 (A) polynomial (B) hyperbolic (C) exponential (D) stretched exponential
13. The order of decreasing energy among covalent bond (CB), dipole-dipole interaction (DDI) and London dispersion forces (LDF) is
 (A) $\text{LDF} > \text{CB} > \text{DDI}$ (B) $\text{CB} > \text{LDF} > \text{DDI}$
 (C) $\text{CB} > \text{DDI} > \text{LDF}$ (D) $\text{DDI} > \text{CB} > \text{LDF}$

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14. The molar concentration of Ag^+ in a solution having pAg^+ of 6.372 is
(A) $4.25 \times 10^{-7} \text{ M}$ (B) 4.25 M (C) 6.372 M (D) $4.25 \times 10^7 \text{ M}$
15. The arrangement of the *electron pairs* around Sb in SbCl_4^- is
(A) tetrahedral (B) trigonal bipyramidal (C) square pyramidal (D) octahedral
16. The correct statement associated with the complex anion $[\text{CoF}_6]^{3-}$ is
(A) It is a low spin complex (B) It is a high spin complex
(C) It is yellow in colour (D) It is diamagnetic
17. A coordination complex has only two isomers, having octahedral coordination geometry. Identify the complex(es) among the following:
 $[\text{Cr}(\text{H}_2\text{O})_5\text{Cl}]$; $[\text{Cr}(\text{H}_2\text{O})_3\text{Cl}_3]$; $[\text{Ni}(\text{NH}_3)_4\text{Cl}_2]$; $[\text{NH}_4]_4[\text{NiCl}_6]$
(A) only $[\text{Cr}(\text{H}_2\text{O})_5\text{Cl}]$ (B) $[\text{Cr}(\text{H}_2\text{O})_3\text{Cl}_3]$ and $[\text{NH}_4]_4[\text{NiCl}_6]$
(C) $[\text{Cr}(\text{H}_2\text{O})_3\text{Cl}_3]$ and $[\text{Ni}(\text{NH}_3)_4\text{Cl}_2]$ (D) only $[\text{Ni}(\text{NH}_3)_4\text{Cl}_2]$
18. Which of the following is a paramagnetic molecule?
(A) H_2 (B) B_2 (C) C_2 (D) N_2
19. Ruff degradation is generally used for
(A) the determination of the amino acid sequence of protein
(B) the synthesis of nucleic acids from nucleosides
(C) the preparation of one carbon less aldose from parent aldose
(D) chain shortening of a peptide.
20. Find the right structure of the amino acid L-threonine "(2S,3R)-2-amino-3-hydroxybutanoic acid" from the following.

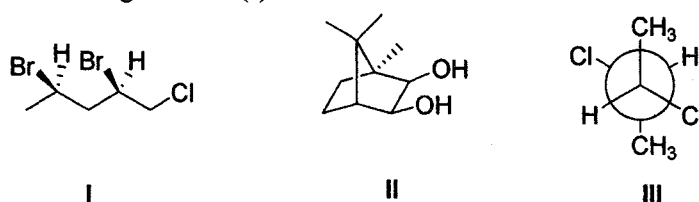


21. The product obtained in the following reaction is



(A)		(B)	
(C)		(D)	

22. Which of the following molecule(s) is/are chiral?

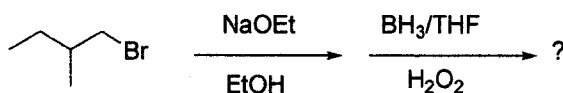


- (A) Only I (B) I and III (C) I, II, and III (D) I and II

23. 1,3,5,7-Cyclononatetraene can be converted to an aromatic substance by

- (A) hydrogen atom abstraction (B) hydride abstraction
(C) proton abstraction (D) H₂ elimination

24. The product obtained in the following transformation is



- (A) 2-Methyl-1-butanol (B) 2-Methyl-2-butanol
(C) 3-Methyl-1-butanol (D) 3-Methyl-2-butanol

25. Which of the following metal is toxic to human body?

- (A) Calcium (B) Magnesium (C) Sodium (D) Lead

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PART-B

26. Which of the following is the maximum value of the function $4\sin 2t$?
- (A) $\pi/2$ (B) 4 (C) $\pi/4$ (D) 16
27. Choose the value of $\left\{ \frac{d}{dx} [x^3 \ln(x^2 - 2x + 5)] \right\}_{x=1}$ from the following.
- (A) $3 \ln 4$ (B) $4 \ln 3$ (C) 4 (D) 4
28. Atomic mass unit (amu) is defined as $1/12$ of the mass of an unbound neutral atom of ^{12}C . Which of the following is the value of amu (in grams) if N is the Avogadro number?
- (A) N (B) $1/N$ (C) $1/12N$ (D) $1/N^2$
29. How many distinct 3-nucleotide codons can be designed using 5 different nucleotides?
- (A) 243 (B) 64 (C) 125 (D) 192
30. How many moles of solute are present in 29.4 mL of 0.606 M solution?
- (A) 0.606 (B) 17.8 (C) 0.03 (D) 0.0178
31. A mixture of 1.20 mol of X, 2.10 mol of Y, and 0.950 mol of Z is found at equilibrium in a 1 litre vessel as shown below.
- $$\text{X} + \text{Y} \rightleftharpoons \text{Z}$$
- What is the value of the equilibrium constant, K ?
- (A) 0.377 (B) 0.542 (C) 2.65 (D) 26.5
32. What is the percent dissociation of acetic acid if the solution has a $\text{pH} = 4.74$ and the $\text{p}K_a = 4.74$?
- (A) 10% (B) 50% (C) 100% (D) 1%
33. If ΔG° is positive for a reaction, the value of K is:
- (A) less than zero (B) equal to zero (C) greater than one (D) between 0 and 1

34. What is the decay constant for a radioactive isotope which decreases to 34% of its original mass in 2.48 h?
- (A) 2.30 h^{-1} (B) 0.137 h^{-1} (C) 0.168 h^{-1} (D) 0.435 h^{-1}
35. Doubling all the coefficient in the equation for the cell reaction
- (A) doubles E° , but does not change ΔG° (B) doubles ΔG° , but does not change E°
 (C) does not change E° or ΔG° (D) doubles both E° and ΔG°
36. Activity of a species in a solution is often preferred over concentration. If activity, activity coefficient, friction coefficient and mole fraction are denoted by a , γ_a , ξ , and χ , respectively, then which of the following correctly defines activity?
- (A) $a = \xi / \chi$ (B) $a = \gamma_a / \chi$ (C) $a = \xi \chi$ (D) $a = \gamma_a \chi$
37. Which of the following spectroscopic techniques is used to measure symmetric stretching modes in molecular vibrations?
- (A) Raman (B) IR (C) EPR (D) UV-Visible
38. Which of the following is formed when two electrons are combined with an α -particle?
- (A) Hydrogen (B) Helium (C) Nitrogen (D) Oxygen
39. If $xy - \ln y = 1$, then the value of $\frac{dy}{dx}$ is
- (A) $\frac{x^2}{(1-xy)}$ (B) $\frac{y^2}{(1-xy)}$ (C) $\frac{xy}{(1-x^2)}$ (D) $\frac{x^2}{(1-x^2)}$
40. The value of the integral $\int_1^3 \frac{dx}{\sqrt{4x-x^2}}$ is
- (A) $\pi^2/3$ (B) $\pi^2/32$ (C) $\pi^2/2$ (D) $\pi/3$
41. In how many ways can 10 students sit in one row in a class?
- (A) 3.6288×10^6 (B) 1.2×10^6 (C) 3.6288×10^3 (D) 1.0×10^{10}

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42. What is the pH of a solution prepared by mixing 25 mL of 0.1 M CH_3COOH with 25 mL of 0.05 M of CH_3COONa ? Assume that the volume of the solutions are additive and that the K_a of CH_3COOH is 1.8×10^{-5} .

- (A) 4.44 (B) 2.87 (C) 4.74 (D) 5.05

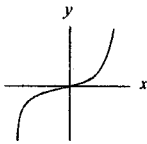
43. In how many ways can 10 students be split into 2 groups to seat in 2 rows containing 4 and 6 students, respectively?

- (A) 120 (B) 112 (C) 210 (D) 102

44. What is the value of x when the points A(7,3), B(-1,0), and C(x,-2) form the vertices of a right-angled (at B) triangle?

- (A) 2 (B) 1 (C) 0 (D) -1

45. What is the function represented in the plot below?

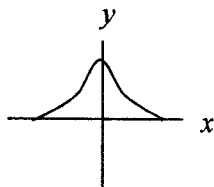


- (A) $y = x$ (B) $y = x^2$ (C) $y = x^3$ (D) $y = x^4$

46. Which of the following represents the polar coordinate of the point $(1, \sqrt{3})$?

- (A) $(2, \pi/3)$ (B) $(1, \pi)$ (C) $(2, \pi/2)$ (D) $(2, \pi)$

47. What will be the value of $\frac{dy}{dx} \Big|_{x=0}$ for the function plotted below?

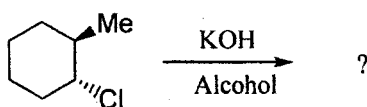


- (A) Finite positive (B) Finite negative (C) Zero (D) Indeterminant

Booklet code A

53. In a process of expansion of a gas, the change in the internal energy was found equal to the heat involved alone. Which of the following is implied by this?
- (A) The gas was expanded isothermally
(B) The process was carried out at constant volume
(C) The gas was expanded under constant pressure
(D) The expansion was carried out irreversibly
54. For which physical property is the unit Poise used?
- (A) Surface tension (B) Drift velocity (C) Dipole moment (D) Viscosity
55. A 25 mL solution is prepared at 25°C by dissolving 4 g of a solute. Which of the following experimental quantities can be used to calculate the molar mass of the solute?
- (A) Diffusion coefficient (B) Steady-state viscosity of the solution
(C) Hydrostatic pressure of the solution (D) Osmotic pressure of the solution
56. Which of the following spectroscopic methods is associated with Larmor precession frequency?
- (A) Magnetic resonance (B) Anti-Stokes Raman scattering
(C) Mössbauer effect (D) Extended X-ray absorption
57. In analytic geometry, which of the following is described by the equation $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$?
- (A) Parabola (B) Hyperbola (C) Ellipse (D) Line
58. Consider four diatomic molecules M1, M2, M3, and M4 of same atoms with bond orders 2.5, 3, 4, and 2, respectively. Which of the following arrangements describes them with decreasing bond energy?
- (A) M3>M4>M1>M2 (B) M1>M2>M3>M4
(C) M3>M2>M4>M1 (D) M3>M2>M1>M4

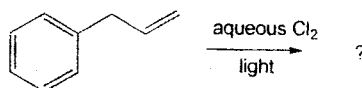
59. Which of the following amino acids has the side-chain structure $\text{H}_2\text{N}(\text{CO})\text{CH}_2 -$?
 (A) Arginine (B) Lysine (C) Glutamine (D) Asparagine
60. Choose from the following the enzyme which catalyzes the conversion of starch to maltose.
 (A) Maltase (B) Diastase (C) Elastase (D) Zymase
61. Proteoglycans are biological molecules consisting of a glycosaminoglycan chain linked to an amino acid residue of a core protein. Identify the relevant amino acid from the following.
 (A) Alanine (B) Serine (C) Valine (D) Glycine
62. Which of the following contributes to the total energy of a monatomic ideal gas?
 (A) Kinetic energy (B) Potential energy
 (C) Vibrational energy (D) The sum of kinetic, potential, and vibrational energies
63. The product obtained in the following reaction is

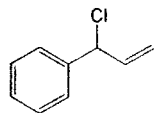
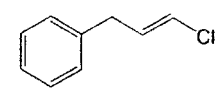
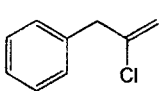
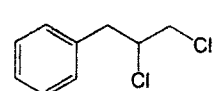


(A)	(B)
(C)	(D)

Booklet code A

64. The major product obtained in the following reaction is



(A) 	(B) 
(C) 	(D) 

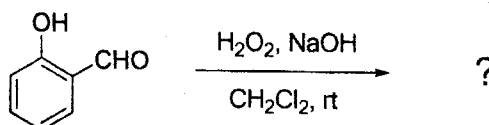
65. Which of the following statements about fatty acids is not true?

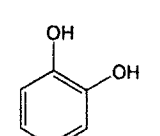
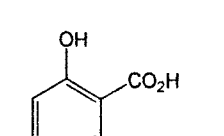
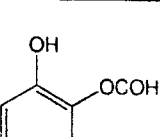
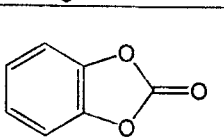
- (A) Fatty acids dissolve in non-polar solvents
- (B) Triglycerides are esters of fatty acids
- (C) Most naturally occurring fatty acids have *trans* double bonds
- (D) Fatty acids are biosynthesized from acetyl coenzyme A

66. The pathway involved for the Hofmann elimination is

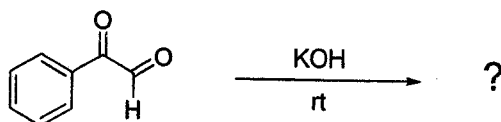
- (A) S_N2 (B) E1 (C) E2 (D) S_N1

67. The product obtained in the following transformation is



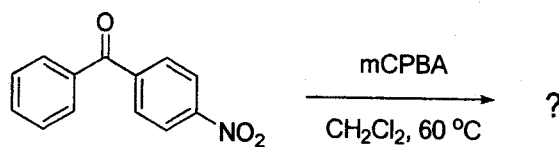
(A) 	(B) 
(C) 	(D) 

68. The product obtained in the following transformation is



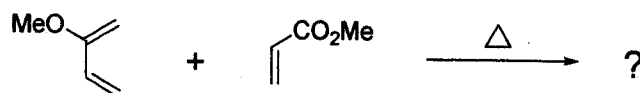
<p>(A)</p>	<p>(B)</p>
<p>(C)</p>	<p>(D)</p>

69. The product obtained in the following transformation is



<p>(A)</p>	<p>(B)</p>
<p>(C)</p>	<p>(D)</p>

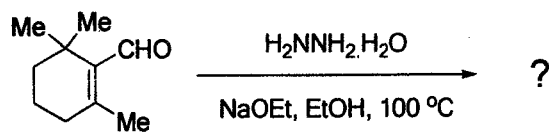
70. The major product obtained in the following reaction is



<p>(A)</p>	<p>(B)</p>
<p>(C)</p>	<p>(D)</p>

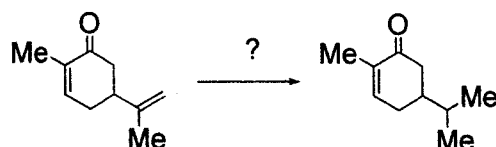
Booklet code A

71. The major product obtained in the following reaction is



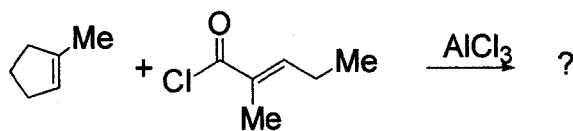
(A)	(B)
(C)	(D)

72. Choose from the following the suitable reagent required for the transformation



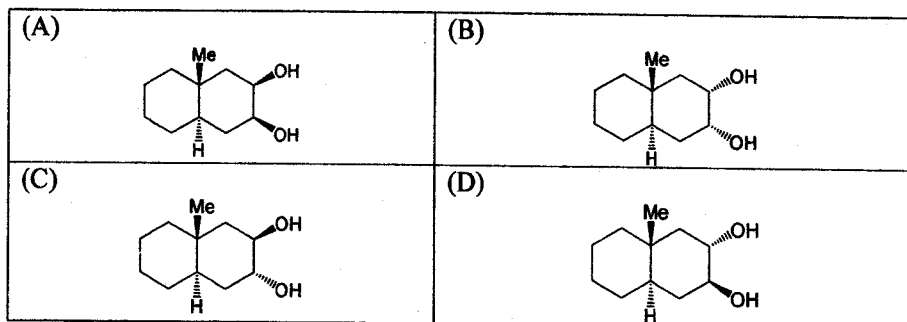
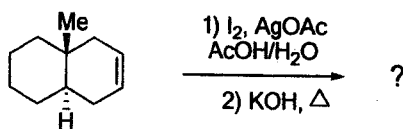
- (A) H_2 , Pd/C (B) Li/ Liquid NH_3 (C) H_2 , PdCl₂, CuCl₂, H₂O (D) H_2 , [RhCl(PPh₃)₃]

73. The product obtained in the following transformation is

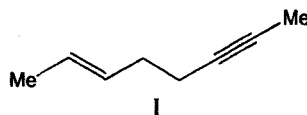


(A)	(B)
(C)	(D)

74. The most probable product obtained in the following transformation is

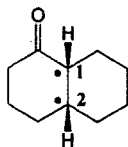


75. The IUPAC name of the compound 'I' is



- (A) (E)-Oct-2-en-6-yne (B) (Z)- Oct-2-en-6-yne
 (C) (E)-Oct-6-en-2-yne (D) (Z)-Oct-6-en-2-yne

76. The stereochemistry of the '•' marked centers in the following molecule is



- (A) 1(R)2(R) (B) 1(R)2(S) (C) 1(S)2(R) (D) 1(S)2(S)

77. The functionality that shows a typical characteristic peak at 2250 cm^{-1} in IR is

- (A) CN (B) CHO (C) NCO (D) N_3

78. Optical rotation value of a mixture of enantiomers of the compound 'X' is $+40^\circ$. Specific rotation of the (R)-isomer of 'X' is $+50^\circ$. Percentage of (S)-isomer of 'X' present in the mixture is

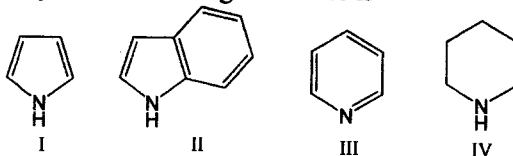
- (A) 20% (B) 80% (C) 10% (D) 30%

Booklet code A

79. Consider a ^1H NMR spectrum in which a singlet and a quartet appeared at 9.72 and 2.40 ppm, respectively. Which of the following compounds is the most probable one?

- (A) CH_3COCH_3 (B) $\text{CH}_3\text{CH}_2\text{CHO}$ (C) CH_3CHO (D) $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$

80. Increasing order of basicity of the following molecules is



- (A) $\text{I} < \text{II} < \text{III} < \text{IV}$ (B) $\text{II} < \text{III} < \text{IV} < \text{I}$
(C) $\text{II} < \text{I} < \text{III} < \text{IV}$ (D) $\text{II} < \text{I} < \text{IV} < \text{III}$

81. In a redox reaction, how many moles of iodine will be equivalent to one mole of hydrogen peroxide?

- (A) 1 mole (B) 1/2 mole (C) 2 moles (D) 4 moles

82. If hydrogen sulphide gas is passed through an acidified solution containing a mixture of the sulphates of cadmium, nickel and zinc, which sulphide/sulphides will be precipitated?

- (A) CdS and NiS (B) NiS and ZnS (C) NiS (D) CdS

83. Which among the following compounds/ions are diamagnetic?



- (A) CoCl_4^{2-} and PdCl_4^{2-} (B) CuCl_6^{4-} ; $\text{Cu}(\text{SCN})$ and $\text{Ni}(\text{CO}_4)$
(C) $\text{Cu}(\text{SCN})$ and $\text{Ni}(\text{CO}_4)$ (D) $\text{Cu}(\text{SCN})$, $\text{Ni}(\text{CO}_4)$ and PdCl_4^{2-}

84. Complete the sentence "A tetrahedron has six _____." using one of the following choices.

- (A) vertices and edges (B) edges (C) faces (D) faces and vertices

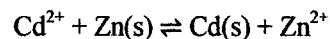
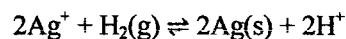
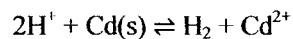
85. Which of the following fluorides is not formed by xenon?

- (A) XeF_2 (B) XeF_3 (C) XeF_4 (D) XeF_6

86. Oxygen exists in positive oxidation state in

- (A) H_2O_2 (B) N_2O (C) CO_2 (D) OF_2

87. The following reactions are spontaneous and thus proceed to the right as shown below.



Which of the following correctly shows the decreasing order of oxidizing strength of ions?

- (A) $\text{Ag}^+ > \text{H}^+ > \text{Zn}^{2+} > \text{Cd}^{2+}$ (B) $\text{Zn}^{2+} > \text{Cd}^{2+} > \text{H}^+ > \text{Ag}^+$
(C) $\text{H}^+ > \text{Ag}^+ > \text{Cd}^{2+} > \text{Zn}^{2+}$ (D) $\text{Ag}^+ > \text{H}^+ > \text{Cd}^{2+} > \text{Zn}^{2+}$

88. The ligand used in quantitative (gravimetric) estimation of aluminium is

- (A) DMG (B) Glycine (C) EDTA (D) Oxine

89. Identify the electrically conductive material from the following

- (A) Fullerene (B) Diamond (C) S_2N_2 (D) K-salt of fullerene

90. If atomic weight of nitrogen is 14.0067, what is the ratio of ^{15}N [$m = 15.001$] to ^{14}N [$m = 14.0037$] ?

- (A) 0.0036:1 (B) 0.36:1 (C) 1:0.36 (D) 1:1

91. The number of lone pairs of electrons on the central atom in I_3^- , ClF_3 and ClO_3^- are, respectively,

- (A) 2, 2, 1 (B) 1, 2, 0 (C) 3, 2, 1 (D) 3, 1, 0

92. Ratio of the number of tetrahedral voids to octahedral voids in cubic close packing (ccp) arrangement is

- (A) 1:2 (B) 2:1 (C) 1:1 (D) 3:1

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93. Consider the carbon skeleton of naphthalene. If the C-C distance in the hexagonal ring is 1.40 \AA , which of the following represents the (maximum) length and width of the carbon skeleton?
- (A) ~ 2.80 and $\sim 4.84 \text{ \AA}$ (B) ~ 4.84 and $\sim 2.80 \text{ \AA}$
(C) 5.60 and 4.20 \AA (D) 5.60 and 2.80 \AA
94. The compound with the lowest boiling point among NH_3 , PH_3 , AsH_3 and SbH_3 is
- (A) NH_3 (B) PH_3 (C) AsH_3 (D) SbH_3
95. A solution of a mixture of CaCl_2 and NaCl weighing 4.44 g was treated with sodium carbonate solution to precipitate all the calcium ions as calcium carbonate (atomic mass of $\text{Ca} = 40$). The calcium carbonate so obtained was heated strongly and 0.56 g of CaO was obtained. The percentage of NaCl in the mixture is
- (A) 25 (B) 37.5 (C) 50 (D) 75
96. A solution of $[\text{Cr}_2\text{O}_7]^{2-}$ ion can be transformed to $[\text{CrO}_4]^{2-}$ solution by adding
- (A) H_2SO_4 (B) H_2O_2 (C) NaOH (D) $\text{Na}_2\text{S}_2\text{O}_3$
97. The complexes $[\text{Co}(\text{NH}_3)_6][\text{Cr}(\text{CN})_6]$ and $[\text{Cr}(\text{NH}_3)_6][\text{Co}(\text{CN})_6]$ are examples of
- (A) Linkage isomerism (B) Ionization isomerism
(C) Geometrical isomerism (D) Coordination isomerism
98. Concentration of I_2 in 50 mL of water is $1.00 \times 10^{-3} \text{ M}$. This iodine can be extracted from water by an organic solvent using a separating funnel. If the distribution coefficient for iodine between the organic solvent and water is 85, the best way of extraction is
- (A) Extract with 50.0 mL of organic solvent once
(B) Extract with 25.0 mL of organic solvent two times
(C) Extract with 10.0 mL of organic solvent five times
(D) Extract with 100.0 mL of organic solvent once

99. Which among the following compounds is stable at room temperature?

- (A) $\text{Ni}(\text{CO})_3$ (B) $\text{Ni}(\text{CO})_4$ (C) $\text{Ni}(\text{CO})_5$ (D) $\text{Ni}(\text{CO})_6$

100. Choose from the following the number of ATP molecules produced in glycolysis.

- (A) 1 (B) 2 (C) 3 (D) 30