Gurukripa™
CAREER INSTITUTE

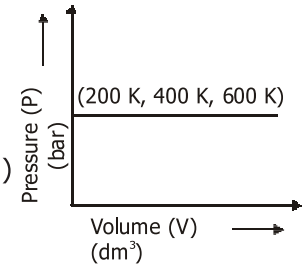
Question Paper With Key
NEET(UG)-2021
Code - (N-1)

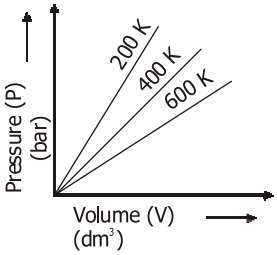
Date : 12-09-2021 | Duration : 3 Hours | Max. Marks : 720

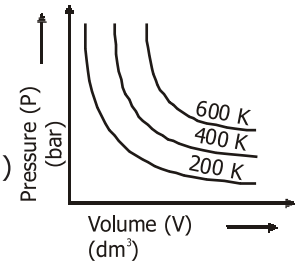
IMPORTANT INSTRUCTIONS

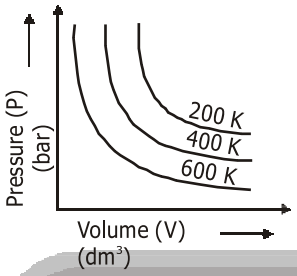
1. The test is of 3 hours duration and Test Booklet contains 200 questions. Each question carries 4 marks. For each correct response, the candidate will get 4 marks. For each incorrect response, one mark will be deducted from the total scores. The maximum marks are 720.
2. Use Blue / Black Ball point Pen only for writing particulars on this page/marking responses.
3. Rough work is to be done on the space provided for this purpose in the Test Booklet only.
4. On completion of the test, the candidate must handover the Answer Sheet to the Invigilator before leaving the Room / Hall. The candidates are allowed to take away this Test Booklet with them.
5. The CODE for this Booklet is **N1**.
6. The candidates should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet. Do not write your Roll No. anywhere else except in the specified space in the Test Booklet/Answer Sheet.
7. Each candidate must show on demand his/her Admission Card to the Invigilator.
8. No candidate, without special permission of the Superintendent or Invigilator, would leave his/her seat.
9. Use of Electronic/Manual Calculator is prohibited.
10. The candidates are governed by all Rules and Regulations of the examination with regard to their conduct in the Examination Hall. All cases of unfair means will be dealt with as per Rules and Regulations of this examination.
11. No part of the Test Booklet and Answer Sheet shall be detached under any circumstances.
12. The candidates will write the Correct Test Booklet Code as given in the Test Booklet / Answer Sheet in the Attendance Sheet.

51. Choose the correct option for graphical representation of Boyle's law, which shown a graph of pressure vs. volume of a gas at different temperature -

(1) 

(2) 

(3) 

(4) 

Ans. (3)

52. **Statement-I :** Acid strength increases in the order given as HF << HCl << HBr << HI.
Statement-II : As the size of the elements F, Cl, Br, I increases down the group, the bond strength of HF, HCl, HBr and HI decreases and so the acid strength increases.
In the light of the above statements, choose the correct answer from the option given below -
(1) Both statement I and Statement II are false
(2) Statement I is correct but Statement II is false
(3) Statement I is incorrect but Statement II is ture
(4) Both Statement I and Statement II are true

Ans. (4)

53. Tritium, a radioactive isotope of hydorgen, emits which of the following particles -
(1) Alpha (α)
(2) Gamma (γ)
(3) Neutron (η)
(4) Beta (β^-)

Ans. (4)

54. The maximum temperature that can be achieved in blast furnace is -
(1) upto 2200 K
(2) upto 1900 K
(3) upto 5000 K
(4) upto 1200 K

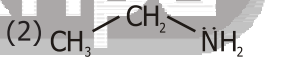
Ans. (1)

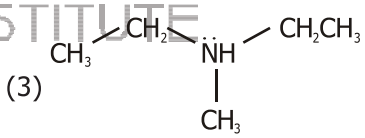
55. Noble gases are named because of their inertness towards reactivity. Identify in incorrect statement about them.
(1) Noble gases have very high melting and boiling points.
(2) Noble gases have weak dispersion forces.
(3) Noble gases have large positive values of electron gain enthalpy.
(4) Noble gases are sparingly soluble in water.

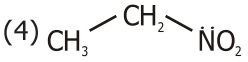
Ans. (1)

56. Identify the compound that will react with Hinsberg's reagent to give a solid which dissolves in alkali -

(1) 

(2) 

(3) 

(4) 

Ans. (2)

57. Among the following alkaline earth metal halides one which is covalent and soluble in organic solvents is -
(1) Strontium chloride
(2) Magnesium chloride
(3) Beryllium chloride
(4) Calcium chloride

Ans. (3)

58. What is the IUPAC name of the organic compound formed in the following chemical reaction -

$$\text{Acetone} \xrightarrow[\text{(ii) } H_2O, H^+]{\text{(i) } C_2H_5MgBr, \text{ dry Ether}} \text{Product}$$

(1) pentan-2-ol
(2) pentan-3-ol
(3) 2-methyl butan-2-ol
(4) 2-methyl propan-2-ol

Ans. (3)

59. BF_3 is planar and electron dificient compound. Hybridization and number of electrons around the central atom, respectively are -
(1) sp^3 and 6
(2) sp^2 and 6
(3) sp^2 and 8
(4) sp^3 and 4

Ans. (2)

60. The structures of beryllium chloride in solid state and vapour phase are -
(1) Linear in both
(2) Dimer and Linear, respectively
(3) Chain in both
(4) Chain and dimer, respectively

Ans. (4)

61. The RBC deficiency is deficiency disease of -
(1) Vitamin B_6
(2) Vitamin B_1
(3) Vitamin B_2
(4) Vitamin B_{12}

Ans. (4)

62. The correct option for the number of body centred unit cells in all 14 types of Bravis lattice unit cells is -
(1) 5
(2) 2
(3) 3
(4) 7

Ans. (3)

63. The molar conductance of NaCl, HCl and CH_3COONa at infinite dilution are 126.45, 426.16 and 91.0 S cm^2 mol^{-1} respectively. The molar conductance of CH_3COOH at infinite dilution is -
(1) 390.71 S cm^2 mol^{-1}
(2) 698.28 S cm^2 mol^{-1}
(3) 540.48 S cm^2 mol^{-1}
(4)201.28 S cm^2 mol^{-1}

Ans. (1)

64. Which one of the following polymer is prepared by addition polymersation -
(1) Nylon-66
(2) Novolac
(3) Dacron
(4) Teflon

Ans. (4)

65. The pK_b of dimethylamine and pK_a of acetic acid are 3.27 and 4.77 respectively at T (K). The correct option for the pH of dimethylammonium acetate solution is -
(1) 5.50
(2) 7.75
(3) 6.25
(4) 8.50

Ans. (2)

66. A particular station of All India Radio, New Delhi, broadcasts on a frequency of 1368 kHz (kilohertz). The wavelength of the electromagnetic radiation emitted by the transmitter is [speed of light, $c = 3.0 \times 10^8$ ms^{-1}]
(1) 219.2 m
(2) 2192 m
(3) 21.92 cm
(4) 219.3 m

Ans. (4)

67. Right option for the number of tetrahedral and octahedral voids in hexagonal primitive unit cell are -
(1) 6, 12
(2) 2, 1
(3) 12, 6
(4) 8, 4

Ans. (3)

68. The following solution were prepared by dissolving 10 g of glucose ($C_6H_{12}O_6$) in 250 ml of water (P_1), 10 g of urea (CH_4N_2O) in 250 ml of water (P_2) and 10 g of sucrose ($C_{12}H_{22}O_{11}$) in 250 ml of water (P_3). The right option for the decresing order of osmotic pressure of these solutions is -

(1) $P_1 > P_2 > P_3$

(2) $P_2 > P_3 > P_1$

(3) $P_3 > P_1 > P_2$

(4) $P_2 > P_1 > P_3$

Ans. (4)

69. Match List-I with List-II.

List-I	**List-II**
(a) PCl_5	(i) Square pyramidal
(b) SF_6	(ii) Trigonal planar
(c) BrF_5	(iii) Octahedral
(d) BF_3	(iv) Trigonal bipyramidal

Choose the correct answer from the option given below -

(1) (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)

(2) (a)-(iii), (b)-(i), (c)-(iv), (d)-(ii)

(3) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

(4) (a)-(iv), (b)-(iii), (c)-(i), (d)-(ii)

Ans. (4)

70. Ethylene diaminetetraacetate (EDTA) ion is -

(1) Unidentate ligand

(2) Bidentate ligand with two "N" donor atoms

(3) Tridentate ligand with three "N" donor atoms

(4) Hexadentate ligand with four "O" and two "N" donor atoms

Ans. (4)

71. The right option for the statement "Tyndall effect is exhibited by", is -

(1) Glucose solution

(2) Starch solution

(3) Urea solution

(4) NaCl solution

Ans. (2)

72. The major product formed in dehydrohalogenation reaction of 2-Bromo pentane is Pent-2-ene. This product formation is based on -

(1) Hund's Rule

(2) Hofmann Rule

(3) Huckel's Rule

(4) Saytzeff's Rule

Ans. (4)

73. Dihedral angle of least stable conformer of ethane is :

(1) 180°

(2) 60°

(3) 0°

(4) 120°

Ans. (3)

74. The major product of the following chemical reaction is -

$$(CH_3)_2CH{-}CH{=}CH_2 + HBr \xrightarrow{(C_6H_5CO)_2O_2} ?$$

(1) $(CH_3)_2CH{-}CH_2{-}CH_2{-}O{-}COC_6H_5$

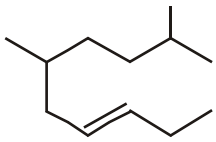
(2) $(CH_3)_2CH{-}\underset{\displaystyle Br}{\underset{|}{CH}}{-}CH_3$

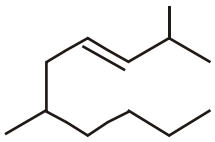
(3) $(CH_3)_2CBr{-}CH_2{-}CH_3$

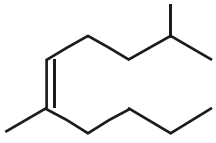
(4) $(CH_3)_2CH{-}CH_2{-}CH_2{-}Br$

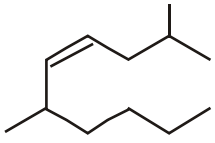
Ans. (4)

75. The correct structres of 2,6-Dimethyldec-4-ene -

(1) 

(2) 

(3) 

(4) 

Ans. (4)

76. Zr (Z = 40) and Hf(Z = 72) have similar atomic and ionic radii because of -
(1) diagonal relationship
(2) lanthanoid contraction
(3) having similar chemical properties
(4) belonging to same group
Ans. (2)

77. Given below are two statements :
Statment-I : Aspirin and Paracetamol belong to the class of narcotic analgesics.
Statement-II : Morphine and Heroin are non-narcotic analgesics.
In the light of the above statement, choose the correct answer from the options given below -
(1) Both statement-I and statement-II are false.
(2) Statement-I is correct but statement-II is false.
(3) statement-I is incorrect but statement-II is true.
(4) Both statement-I and statement-II are ture.
Ans. (1)

78. Which of the following methods can be used to obtain highly pure metal which is liquid at room temperature -
(1) Chromatography
(2) Distillation
(3) Zone refining
(4) Electrolysis
Ans. (3)

79. The compound which shows metamerism is -
(1) C_3H_8O
(2) C_3H_6O
(3) $C_4H_{10}O$
(4) C_5H_{12} **Ans. (3)**

80. Which of the following reactions is the metal displacement reaction, choose the right option -
(1) $Cr_2O_3 + 2Al \xrightarrow{\Delta} Al_2O_3 + 2Cr$
(2) $Fe + 2HCl \longrightarrow FeCl_2 + H_2\uparrow$
(3) $2Pb(NO_3)_2 \longrightarrow 2PbO + 4NO_2 + O_2\uparrow$
(4) $2KClO_3 \xrightarrow{\Delta} 2KCl + 3O_2$
Ans. (1)

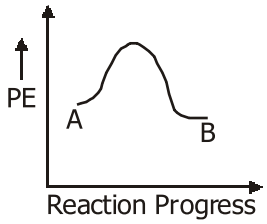
81. The incorrect statement among the following is -
(1) Most of the trivalent Lanthanoid ions are colourless in the solid state.
(2) Lanthanoids are good conductors of heat and electricity.
(3) Actinode are highly reactive metals, especially when finely divided.
(4) Actinoid contraction is greater for element to element than Lanthanoid concentration.
Ans. (1)

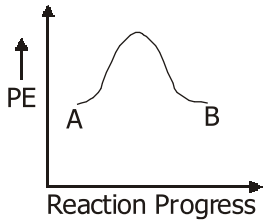
82. Which one among the following is the correct option for right relationship between C_P and C_V for one mole of ideal gas -
(1) $C_P - C_V = R$
(2) $C_P = RC_V$
(3) $C_V = RC_P$
(4) $C_P + C_V = R$
Ans. (1)

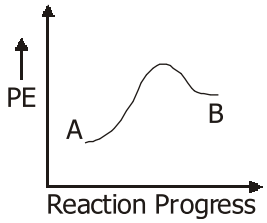
83. The correct sequence of bond enthalpy of 'C – X' bond is -
(1) $CH_3-F > CH_3-Cl > CH_3-Br > CH_3-I$
(2) $CH_3-F < CH_3-Cl > CH_3-Br > CH_3-I$
(3) $CH_3-Cl > CH_3-F > CH_3-Br > CH_3-I$
(4) $CH_3-F < CH_3-Cl < CH_3-Br < CH_3-I$
Ans. (1)

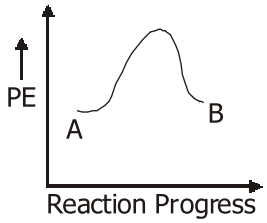
84. An organic compound contains 78% (by wt.) carbon and remaining percentage of hydrogen. The right option for the empirical formula of this compound is (Atomic wt. of C is 12, H is 1)
(1) CH_2
(2) CH_3
(3) CH_4
(4) CH
Ans. (2)

85. For a reaction A → B, enthalpy of reaction is – 4.2 kJ mol^{-1} and enthalpy of activation is 9.6 kJ mol^{-1}. The correct energy profile for the reaction is shown in option -

(1) 

(2) 

(3) 

(4) 

Ans. (1)

86. The molar conductivity of 0.007 M acetic acid is 20 S cm^2 mol^{-1}. What is the dissociation constant of acetic acid, choose the correct option -

$$\left[\begin{array}{l} \wedge^{\circ}_{H^+} = 350\,S\,cm^2mol^{-1} \\ \wedge^{\circ}_{CH_3COO^-} = 50\,S\,cm^2mol^{-1} \end{array}\right]$$

(1) 2.50×10^{-4} mol L^{-1}

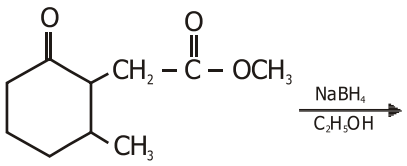
(2) 1.75×10^{-5} mol L^{-1}

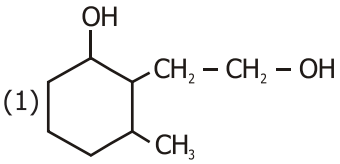
(3) 2.50×10^{-5} mol L^{-1}

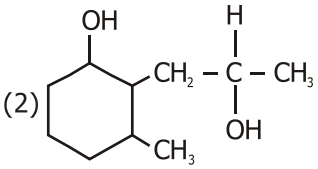
(4) 1.75×10^{-4} mol L^{-1}

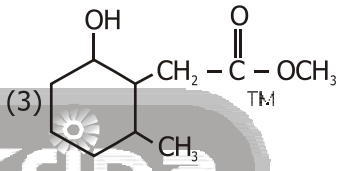
Ans. (2)

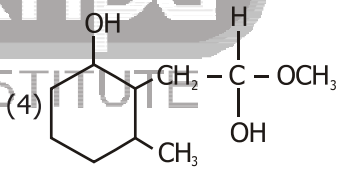
87. The product formed in the following chemical reaction is -



(1) 

(2) 

(3) 

(4) 

Ans. (3)

88. Match List-I with List-II -

List-I	List-II
(a) $2SO_2(g) + O_2(g) \longrightarrow 2SO_3(g)$	(i) Acid rain
(b) $HOCl(g) \xrightarrow{h\nu} \dot{O}H + \dot{C}l$	(ii) Smog
(c) $CaCO_3(g) + H_2SO_4 \longrightarrow CaSO_4 + H_2O + CO_2$	(iii) Ozone depletioni
(d) $NO_2(g) \xrightarrow{h\nu} NO(g) + O(g)$	(iv) Trophospheric pollution

Choose the correct answer from the options given below -

(1) a-ii, b-iii, c-iv, d-i

(2) a-iv, b-iii, c-i, d-ii

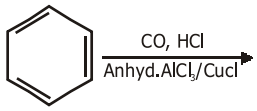
(3) a-iii, b-ii, c-iv, d-i

(4) a-i, b-ii, c-iii, d-iv

Ans. (2)

89. Match List-I with List-II -

List-I | List-II

(a)  | (i) Hell-Vollard Zelinsky reaction

(b) $R-\overset{\overset{O}{\|}}{C}-CH_3 + NaOX \longrightarrow$ | (ii) Gattermann-Koch reaction

(c) $R-CH_2-OH + R'COOH \xrightarrow{H_2SO_4}$ | (iii) Haloform reaction

(d) $R-CH_2COOH \xrightarrow[(ii)\ H_2O]{(i)\ X_2/Red\ P}$ | (iv) Esterification

Choose the correct answer from the options given below -

(1) a-iii, b-ii, c-i, d-iv

(2) a-i, b-iv, c-iii, d-ii

(3) a-ii, b-iii, c-iv, d-i

(4) a-iv, b-i, c-ii, d-iii

Ans. (3)

90. In which one of the following arrangements be given sequence is not strictly according to the properties indicated against it -

(1) $H_2O < H_2S < H_2Se < H_2Te$: Increasing pK_a values

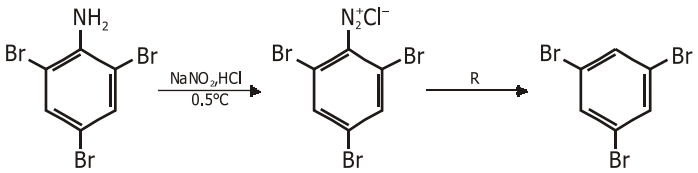
(2) $NH_3 < PH_3 < AsH_3 < SbH_3$: Increasing acidic character

(3) $CO_2 < SiO_2 < SnO_2 < PbO_2$: Increasing oxidizing power

(4) HF < HCl < HBr < HI : Increasing acidic strength

Ans. (1)

91. The reagent 'R' in the given sequence of chemical reaction is -



(1) CH_3CH_2OH

(2) HI

(3) CuCN/KCN

(4) H_2O

Ans. (1)

92. For irreversible expansion of an ideal gas under isothermal condition, the correct option is -

(1) $\Delta U \neq 0, \Delta S_{total} \neq 0$

(2) $\Delta U = 0, \Delta S_{total} \neq 0$

(3) $\Delta U \neq 0, \Delta S_{total} = 0$

(4) $\Delta U = 0, \Delta S_{total} = 0$

Ans. (2)

93. The correct option for the value of vapour pressure of a solution at 45°C with benzene to octane in molar ratio 3 : 2 is [At 45°C vapour pressure of benzene is 280 mm Hg and that of octane is 420 mm Hg. Assume ideal gas)]

(1) 168 mm of Hg

(2) 336 mm of Hg

(3) 350 mm of Hg

(4) 160 mm of Hg

Ans. (2)

94. Match List-I with List-II -

List-I | List-II

(a) $[Fe(CN)_6]^{3-}$ | (i) 5.92 BM

(b) $[Fe(H_2O)_6]^{3+}$ | (ii) 0 BM

(c) $[Fe(CN)_6]^{4-}$ | (iii) 4.90 BM

(d) $[Fe(H_2O)_6]^{2+}$ | (iv) 1.73 BM

Choose the correct answer from the options given below -

(1) a-ii, b-iv, c-iii, d-i

(2) a-i, b-iii, c-iv, d-ii

(3) a-iv, b-i, c-ii, d-iii

(4) a-iv, b-ii, c-i, d-iii

Ans. (3)

95. The slope of Arrhenius Plot $\left(\ln k \text{ v/s } \frac{1}{T}\right)$ of first order reactions is -5×10^3 K. The value of E_a of the reactions is. Choose the correct option for your answer :

[Given R = 8.314 $JK^{-1}mol^{-1}$]

(1) 83.0 kJ mol^{-1}

(2) 166 kJ mol^{-1}

(3) – 83 kJ mol^{-1}

(4) 41.5 kJ mol^{-1}

Ans. (4)

96. From the following pairs of ions which one is not an iso-electronic pair -
(1) Na^+, Mg^{2+}
(2) Mn^{2+}, Fe^{3+}
(3) Fe^{2+}, Mn^{2+}
(4) O^{2-}, F^-

Ans. (3)

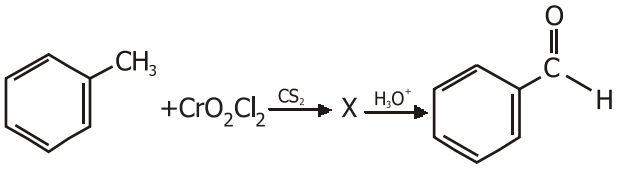
97. Choose the correct option for the total pressure (in atm) in a mixture of 4 g O_2 and 2 g H_2 confined in a total volume of one litre at 0°C is -
[Given R = 0.082 L atm $mol^{-1}K^{-1}$, T = 273 K]
(1) 2.602
(2) 25.18
(3) 26.02
(4) 2.518

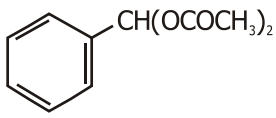
Ans. (2)

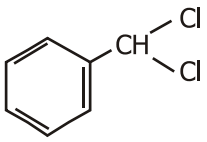
98. $CH_3CH_2COO^-Na^+ \xrightarrow[\text{Heat}]{NaOH+?} CH_3CH_3 + Na_2CO_3$.
Consider the above reaction and identify the missing reagent/chemical -
(1) Red phosphorus
(2) CaO
(3) DIBAL-H
(4) B_2H_6

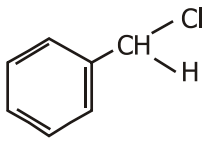
Ans. (2)

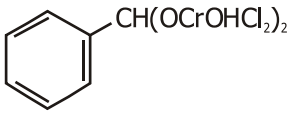
99. The intermediate compound 'X' in the following chemical reaction is -



(1) 

(2) 

(3) 

(4) 

Ans. (4)

100. Which of the following molecules is non-polar in nature -
(1) CH_2O
(2) $SbCl_5$
(3) NO_2
(4) $POCl_3$

Ans. (2)