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B - SECTION - III
SCIENCE (CBZ)
CHEMISTRY

41. Nitrogen gas is kept in a 1 litre flask under 100 kPa pressure and oxygen gas is kept in another 3 litre flask under 320 kPa pressure. If the two flasks are connected the resultant pressure of the mixture of gases will be :

(A) 310 kPa

(B) 210 kPa

(C) 365 kPa

(D) 265 kPa

42. In a vessel 4 g of O_2, 4 g of H_2, 4 g of N_2 and 4 g of Cl_2 are present. Which of these gases has highest number of atoms ?

(A) O_2

(B) H_2

(C) N_2

(D) Cl_2

43. Which of the following aqueous solution will have highest elevation of boiling point ?

(A) 1 M NaOH

(B) 1 M Na_2SO_4

(C) 1 M NH_4NO_3

(D) 1 M KNO_3

44. When two ice cubes are pressed over each other, they unite to form one cube. Which of the force is responsible to hold them together ?

(A) Hydrogen bond formation

(B) van der Waal's forces

(C) Covalent attraction

(D) Ionic interaction

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45. In the reaction

$PCl_5(g) \rightleftharpoons PCl_3(g) + Cl_2(g)$, the equilibrium concentration of PCl_5 and PCl_3 are 0.4 and 0.2 mole/litre respectively. If the value of K_c is 0.5, what is the concentration of Cl_2 in mole/litre ?

(A) 2.0

(B) 1.5

(C) 1.0

(D) 0.5

46. The shape of NH_3 molecule and hybridisation of the central atom of NH_3 molecule is :

(A) Linear and sp

(B) Trigonal planar and sp^2

(C) Pyramidal and sp^3

(D) Tetrahedral and sp^3

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47. The element having which of the following electronic configuration will have highest ionization energy ?
(A) [Ne] $3s^2\ 3p^1$
(B) [Ne] $3s^2\ 3p^3$
(C) [Ne] $3s^2\ 3p^2$
(D) [Ne] $3s^2\ 3p^4$

48. At 90°C, pure water has $[H_3O^+]=10^{-6}$ M. What is the value of K_w at this temperature ?
(A) 10^{-6}
(B) 10^{-12}
(C) 10^{-13}
(D) 10^{-14}

49. The quantum numbers n and l for four electrons are given below.
(i) n=4, l=1
(ii) n=4, l=0
(iii) n=3, l=2
(iv) n=3, l=1
The order of their energy from lowest to highest is :
(A) (iii) < (i) < (iv) < (ii)
(B) (i) < (ii) < (iii) < (iv)
(C) (ii) < (iv) < (i) < (iii)
(D) (iv) < (ii) < (iii) < (i)

50. The oxidation number of sulphur in S_8, S_2F_2 and H_2S respectively are :
(A) +2, +1, −2
(B) −2, +1, −2
(C) 0, +1, +2
(D) 0, +1, −2

51. The outermost electronic configuration of most electronegative elements is :
(A) $ns^2\ np^3$
(B) $ns^2\ np^4$
(C) $ns^2\ np^6$
(D) $ns^2\ np^5$

52. When copper pyrite is roasted in excess of air, a mixture of CuO and FeO is formed. FeO is present as impurity. This can be removed as slag during reduction of CuO to Cu. The flux that is added to form the slag is :
(A) SiO_2, which is an acidic flux
(B) Limestone, which is a basic flux
(C) SiO_2, which is a basic flux
(D) CaO, which is a basic flux

53. Find the concentration of HCl if 10 ml of 0.5 M $Ca(OH)_2$ solution is required to titrate 50 ml of HCl till the neutralization point.
(A) 5 M
(B) $\frac{1}{10}$ M
(C) 10 M
(D) $\frac{1}{5}$ M

54. The de-Broglie wavelength of a particle of mass 0.001 kg and moving with velocity 100 m/s is given by :
(A) 6.62×10^{-34} m
(B) 6.62×10^{-33} m
(C) 6.62×10^{-35} m
(D) 6.62×10^{-32} m

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55. The volume of carbon dioxide gas at NTP obtained by heating 4.2 g of $MgCO_3$ would be :

(At. mass of Mg = 24, O = 16, C = 12)

(A) 22.4 litres

(B) 11.2 litres

(C) 1.12 litres

(D) 2.24 litres

56. Which method of purification is represented by the following equations ?

$$Ti(s) + 2\,I_2(g) \xrightarrow{523\ K} TiI_4(g) \xrightarrow{1700\ K} Ti(s) + 2\,I_2(g)$$

(A) Cupellation

(B) Poling

(C) Zone refining

(D) Van Arkel Method

57. The order of decreasing stability of the following carbanions is :

(i) $(CH_3)_3C^{\ominus}$

(ii) $(CH_3)_2CH^{\ominus}$

(iii) $CH_3CH_2^{\ominus}$

(iv) $C_6H_5CH_2^{\ominus}$

(A) (i) > (ii) > (iii) > (iv)

(B) (iv) > (iii) > (ii) > (i)

(C) (iv) > (ii) > (i) > (iii)

(D) (i) > (ii) > (iv) > (iii)

58. The IUPAC name of which of the following compounds is wrong ?

(A) $CH_3CH_2CH_2COOCH_2CH_3$ →
Ethyl butanoate

(B) $CH_3-\underset{\underset{CH_3}{|}}{CH}-CH_2CHO$ →
3-Methyl butanal

(C) $CH_3-\underset{\underset{OH}{|}}{CH}-\underset{\underset{CH_3}{|}}{CH}-CH_3$ →
2-Methyl butan-3-ol

(D) $CH_3-\underset{\underset{CH_3}{|}}{CH}-\underset{\underset{O}{||}}{C}-CH_2-CH_3$ →
2-Methyl propan-3-one

59. Anti-Markownikoff's addition of HBr in presence of an organic peroxide is not observed in :

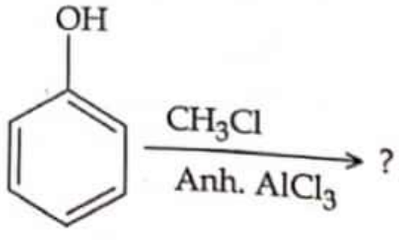
(A) Propene

(B) But-1-ene

(C) But-2-ene

(D) Pent-2-ene

60. What will be the product of the following reaction ?



(A) m-hydroxy toluene

(B) m-chlorophenol

(C) o-chlorophenol and p-chlorophenol

(D) o-hydroxy toluene and p-hydroxy toluene