

OSSTET
Previous Year Paper
2021 Chemistry (CBZ)

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
- 1043811
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

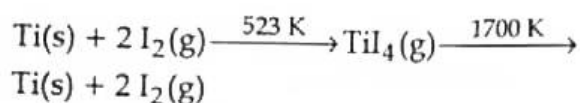
47. The element having which of the following electronic configuration will have highest ionization energy ?
 (A) $[\text{Ne}] 3s^2 3p^1$
 (B) $[\text{Ne}] 3s^2 3p^3$
 (C) $[\text{Ne}] 3s^2 3p^2$
 (D) $[\text{Ne}] 3s^2 3p^4$
48. At 90°C , pure water has $[\text{H}_3\text{O}^+] = 10^{-6} \text{ M}$. What 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) $n=3, l=1$ 1043811
 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) $\frac{1}{10} \text{ M}$
 (C) 10 M
 (D) $\frac{1}{5} \text{ M}$
54. The de-Broglie wavelength of a particle of mass 0.001 kg and moving with velocity 100 m/s is given by :
 (A) $6.62 \times 10^{-34} \text{ m}$
 (B) $6.62 \times 10^{-33} \text{ m}$
 (C) $6.62 \times 10^{-35} \text{ m}$
 (D) $6.62 \times 10^{-32} \text{ m}$

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 ?



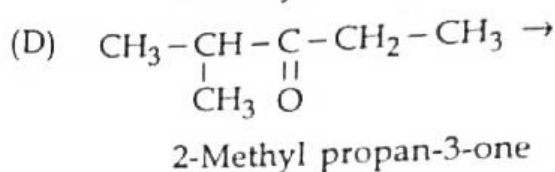
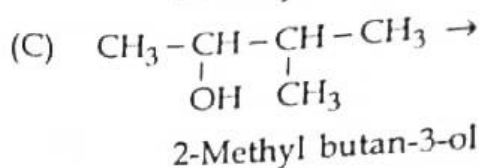
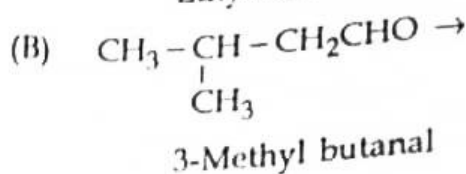
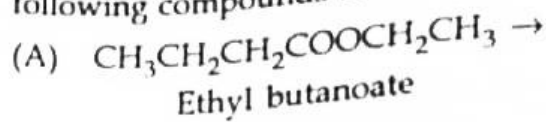
- (A) Cupellation
(B) Poling
(C) Zone refining
(D) Van Arkel Method

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

- (i) $(\text{CH}_3)_3\text{C}^\ominus$
(ii) $(\text{CH}_3)_2\text{CH}^\ominus$
(iii) $\text{CH}_3\text{CH}_2^\ominus$
(iv) $\text{C}_6\text{H}_5\text{CH}_2^\ominus$

- (A) (i) > (ii) > (iii) > (iv)
(B) (iv) > (iii) > (ii) > (i)
(C) (iv) > (ii) > (i) > (iii)
(D) (i) > (ii) > (iv) > (iii)

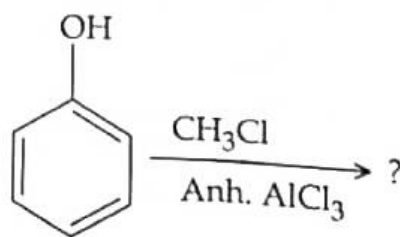
58. The IUPAC name of which of the following compounds is wrong ?



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