Kulkarni Science Academy

Exam Name :-11CET FL chem

Date :-31/08/2025

Time :-90 Minutes

Mark :- 50

CHEMISTRY

1. Which from following substances consists of total 1 mole atoms in it? [Molar mass of $NH_3 = 17, H_2O = 18,\ N_2 = 28\ , CO_2 = 44$] [MHT-CET 2023]

(a) 2.8 g N_2 **(b)** 4.4 gCO_2

(c) 4.25 gNH_3 **(d)** 1.8 gH_2O

2. What is the value of x and y in order to balance the following redox reaction?

$MnO^-_{4aqq)} + 5Fe^{2+}_{(aq)} + Xh^+_{(aq)} \rightarrow Mn^{2+}_{(aq)} + 5Fe^{3+}_{(aq)} + yH_2O$

(a) $x = 6, y = 3$ **(b)** $x = 4, y = 2$

(c) $x = 10, y = 5$ **(d)** $x = 8, y = 4$

3. The probability of finding the electron in the orbital is

(a) 100% **(b)** 90-95%

(c) 70-80% **(d)** 50-60%

4. The unit of atomic mass, amu is replaced by u, here u stands for

(a) unified mass **(b)** united mass

(c) unique mass **(d)** universal mass

5. 2 g of O_2 at $0\,^0C$ and 760 mm of Hg pressure has volume

(a) 1.4 L **(b)** 2.8 L

(c) 11.2 L **(d)** 22.4 L

6. The number of hydrogen atoms present in 25.6 g of sucrose($C_{12}H_{22}O_{11}$) which has a molar mass of 342.3 g is

(a) 22×10^{23} **(b)** 9.91×10^{23}

(c) 11×10^{23} **(d)** 44×10^{23} H atoms

7. Number of molecules present in 5.4 g of urea is [Molar mass $= 60\ g\ mol^{-1}$] [MHT-CET 2021]

(a) 9.0×10^{22} **(b)** 3.5×10^{23}

(c) 6.0×10^{22} **(d)** 5.4×10^{22}

8. The oxidation number of Cr in K_2CrO_4 is

(a) +3 **(b)** -6

(c) $+6$ **(d)** -3

9. How many moles of helium gas occupies 22.4 L at $0°C$ and at 1 atmospheric pressure? [MHT-CET 2022]

(a) 0.9 **(b)** 0.11

(c) 1.11 **(d)** 1.0

10. What it the representation of element (X) having mass number 40 containing 22 neutrons. [MHT-CET 2024]

(a) $^{40}_{18}X$ **(b)** $^{40}_{18}X$

(c) $^{40}_{22}X$ **(d)** $^{40}_{20}X$

11. The relative abundance of two isotopes of atomic weight 85 and 87 is 75% and 25% respectively. The average atomic weight of element is

(a) 75.5 **(b)** 85.5
(c) 40.0 **(d)** 86.0

12. Energy of an electron of Hydrogen atom in ground state is -2.18×10^{-18} J. What is its value in stationary state for $n = 2$? [MHT-CET 2024]
(a) -3.27×10^{-19} J **(b)** -2.00×10^{-19} J
(c) -2.18×10^{-18} J **(d)** -5.45×10^{-19} J

13. The S.I unit of luminious intensity among the following is .....
(a) kg **(b)** N
(c) mol **(d)** cd

14. A particle having a mass of 1.0 mg has a velocity of 3600 km/h. Calculate the wavelength of the particle
(a) 6.626×10^{-28}cm **(b)** 6.626×10^{-29}cm
(c) 6.626×10^{-30}cm **(d)** 6.626×10^{-31}cm

15. Calculate volume of 2.8×10^{-3} kg of dinitrogen [molar mass 28 g mol^{-1}] at STP. [MHT-CET 2024]
(a) 2.24 cm^3 **(b)** 4.48dm^3
(c) 4.48 cm^3 **(d)** 2.24dm^3

16. Find the quantity of dihydrogen required to prepare 2 L ammonia gas from 1 L dinitrogen. [MHT-CET 2022]
(a) 3 L **(b)** $\frac{3}{2}$ L
(c) 2 L **(d)** 1 L

17. What is mass (in gram) of 10 molecules of water? [MHT-CET 2024]
(a) 2.088×10^{-25} g **(b)** 3.208×10^{-23} g
(c) 1.788×10^{-24} g **(d)** 2.989×10^{-22} g

18. According to Bohr s theory, the angular momentum of an electron in 5th orbit is
(a) $25\frac{h}{\pi}$ **(b)** $1.0\frac{h}{\pi}$
(c) $10\frac{h}{\pi}$ **(d)** $2.5\frac{h}{\pi}$

19. Which of following pairs is an example of isoelectronic species? [MHT-CET 2023]
(a) O^{--}; F **(b)** O^{--}; Na^{+}
(c) Ar; Al^{+3} **(d)** K; Ca^{++}

20. The oxidation number of Cr in K_2CrO_4 is (CET 2024)
(a) +3 **(b)** -6
(c) $+6$ **(d)** -3

21. What is the change in oxidation number of selenium in the following redox reaction?
$SeO_{3(qq)}^{2-} + Cl_{2(g)} + 2OH^{-} \longrightarrow SeO_{4(qq)}^{2-} + 2Cl_{(aq)}^{-} + H_2O$ [MHT-CET 2023]
(a) +2 to -2 **(b)** +3 to +4
(c) +4 to +6 **(d)** -2 to +2

22. Calculate the number of molecules in 44.8 cm^3 of nitrogen gas at STP. [MHT-CET 2022]
(a) 1.5×10^{21} **(b)** 1.2×10^{21}
(c) 2.1×10^{21} **(d)** 1.8×10^{21}

23. Given, that the abundances of isotopes ^{54}Fe, ^{56}Fe and ^{57}Fe are 5%, 90% and 5%, respectively, the average atomic mass of Fe is
(a) 55.85 **(b)** 55.95

(c) 55.75 **(d)** 56.05

24. What volume of oxygen is liberated at STP when 12.25 g of potassium chlorate undergoes decomposition?
[Molar mass of $KClO_3 = 122.5\ g\ mol^{-1}$] [MHT-CET 2022]

(a) $3.36dm^3$ **(b)** $6.72dm^3$

(c) $9.54dm^3$ **(d)** $10.18dm^3$

25. The maximum number of electron in p -orbital with $n = 5, m = 1$ is

(a) 6 **(b)** 2

(c) 14 **(d)** 10

26. The oxidation number of ' S ' in HSO_4^- ion is[MHT-CET 2020]

(a) $+1$ **(b)** $+6$

(c) -1 **(d)** -6

27. What is the value of frequency of radiation when transition occurs between two stationary states that differ in energy by ΔE ? [MHT-CET 2021]

(a) $v = \frac{h}{2\pi}$ **(b)** $v = \frac{2\pi}{h}$

(c) $v = \frac{\Delta E}{h}$ **(d)** $v = \frac{h}{\Delta E}$

28. Which one of the following set of quantum numbers is not possible for electron in the ground state of an atom with atomic number 19?

(a) $n = 2, l = 0, m = 0$ **(b)** $n = 2, l = 1, m = 0$

(c) $n = 3, l = 1, m = -1$ **(d)** $n = 3, l = 2, m = +2$

29. In acidic medium, the equivalent weight of $K_2Cr_2O_7$ (Mol.wt.$= M$) is

(a) M **(b)** $\frac{M}{2}$

(c) $\frac{M}{3}$ **(d)** $\frac{M}{6}$

30. In which of the following oxides, nitrogen exhibit $+4$ oxidation state? [JEE 2020]

(a) N_2O_5 **(b)** N_2O_4

(c) N_2O **(d)** N_2O_3

31. Identify reducing agent in following reaction. $H_2O_{2(aq)} + ClO^-_{4(aq)} \rightarrow ClO^-_{2(aq)} + O_{2(g)}$ [MHT-CET 2021]

(a) $ClO^-_{2\,(aq)}$ **(b)** $O_{2(g)}$

(c) $ClO^-_{4(aq)}$ **(d)** $H_2O_{2\,(aq)}$

32. Which of following hydrocarbon has the percentage by mass of H and C in the ratio of $1:3$ respectively? [MHT-CET 2024]

(a) C_2H_4 **(b)** C_2H_6

(c) C_2H_2 **(d)** CH_4

33. An isobar of $_{20}Ca^{40}$ is

(a) $_{18}Ar^{40}$ **(b)** $_{20}Ca^{38}$

(c) $_{20}Ca^{42}$ **(d)** $_{18}Ar^{38}$

34. Identify the compound formed from elements X, Y, Z having oxidation state $+2, +5, -2$ respectively. [MHT-CET 2021]

(a) $X_3(YZ_2)_2$ **(b)** XYZ_2

(c) $X(Y_4Z)$ **(d)** $X_3(YZ_4)_2$

35. Calculate the oxidation number of Cr in CrO_4^{2-} ion and $K_2Cr_2O_7$ respectively? [MHT-CET 2024]

(a) +8 and +2 **(b)** +6 and +6

(c) +3 and +2 **(d)** +4 and +6

36. Among NH_3, HNO_3, NaN_3 and Mg_3N_2; the number of molecules having nitrogen in negative oxidation state is

(a) 1 **(b)** 2

(c) 3 **(d)** 4

37. The empirical formula of a compound is CH_2. One mole of this compound has a mass of 42 g. Its molecular formula is

(a) C_3H_6 **(b)** C_3H_8

(c) CH_2 **(d)** C_2H_2

38. Which among the following elements has highest number of atoms in 1 g each? (At. No.: $Au = 197, Na = 23, Cu = 63.5, Fe = 56$)

(a) $Fe_{(s)}$ **(b)** $Au_{(s)}$

(c) $Na_{(s)}$ **(d)** $Cu_{(s)}$

39. Nitrogen reacts with hydrogen to produce ammonia. What is the ratio of reacting volume of nitrogen, hydrogen and ammonia gas respectively according to Gay-Lussac Law?

(a) 2:1:3 **(b)** 3:1:2

(c) 1:2:3 **(d)** 1:3:2

40. What is the total number of molecules present in $224\ cm^3$ of a gas at STP? [MHT-CET 2021]

(a) 6.022×10^{22} **(b)** 6.022×10^{21}

(c) 6.022×10^{23} **(d)** 6.022×10^{20}

41. What is oxidation state of chromium in $(Cr_2O_7)^{2-}$? [MHT-CET 2023]

(a) +4 **(b)** +3

(c) +6 **(d)** +5

42. The compound in which cation is isoelectronic with anion is

(a) NaCl **(b)** CsF

(c) NaI **(d)** K_2S

43. Which is an oxidizing agent in following reaction?
$Fe_{(s)} + Cu^{2+}_{(aq)} \rightarrow Fe^{2+}_{(aq)} + Cu_{(s)}$ [MHT-CET 2022]

(a) $Cu_{(s)}$ **(b)** $Fe_{(s)}$

(c) $Fe^{2+}_{((qq)}$ **(d)** $Cu^{2+}_{((qq)}$

44. A compound contains 69.5% oxygen and 30.5% nitrogen and its molecular weight is 92. The formula of the compound is

(a) N_2O **(b)** NO_2

(c) N_2O_4 **(d)** N_2O_5

45. What is the volume occupied by 24 g methane gas at STP? [MHT-CET 2021]

(a) $33.6 dm^3$ **(b)** $44.8 dm^3$

(c) $22.4 dm^3$ **(d)** $67.2 dm^3$

46. What is the value of x and y in order to balance following redox reaction.
$xCuO + yNH_3 \longrightarrow xCu + N_2 + xH_2O$ [MHT-CET 2024]

(a) $x = 2, y = 3$ **(b)** $x = 2, y = 1$

(c) $x = 3, y = 2$ **(d)** $x = 1, y = 2$

47. What is the change in oxidation number of Cr in the following redox reaction?

$$3H_2O_{2(aq)} + Cr_2O^{2-}_{7(aqq)} + 8H^+_{(aq)} \rightarrow 3O_{2(g)} + 2Cr^{3+} + 7H_2O$$ [MHT-CET 2023]

(a) +7 to +3 **(b)** +2 to +3

(c) -2 to +3 **(d)** +6 to +3

48. For the reaction, $Fe_2O_3 + 3CO \rightarrow 2\,Fe + 3CO_2$ the volume of carbon monoxide required to reduce one mole of ferric oxide is

(a) 22.4 dm^3 **(b)** 44.8 dm^3

(c) 67.2 dm^3 **(d)** 11.2 dm^3

49. The volume of oxygen required for complete combustion of 0.25 mole of methane at S.T.P. is

(a) $22.4dm^3$ **(b)** $5.6dm^3$

(c) $11.2dm^3$ **(d)** $7.46dm^3$

50. Calculate the mass of 250 molecules of NaCl . [Molar mass of $Na = 23$ and $Cl = 35.5\ g\ mol^{-1}$] [MHT-CET 2024]

(a) 5.80×10^{-23} kg **(b)** 2.428×10^{-23} kg

(c) 3.011×10^{-23} kg **(d)** 4.44×10^{-23} kg