CHEMISTRY - CET 2019 - VERSION – C3
SOLUTION

1. The vitamin that helps in clotting of blood is
   (A) B_2 (B) K (C) A (D) C
   Ans (B)
2. The polymer containing five methylene groups in its repeating unit is
   (A) Dacron (B) Bakelite (C) Nylon 6, 6 (D) Nylon 6
   Ans (D)
3. Cis-l, 4-polyisoprene is called
   (A) Buna-S (B) Natural rubber (C) Buna-N (D) Neoprene
   Ans (B)
4. Which cleansing agent gets precipitated in hard water?
   (A) Cetyl trimethyl ammonium bromide (B) Sodium dodecyl benzene sulphonate
   (C) Sodium lauryl sulphate (D) Sodium stearate
   Ans (D)
5. Anti-histamine among the following is
   (A) Amoxycillin (B) Chloroxylenol (C) Bromopheneramine (D) Morphine
   Ans (C)
6. The elements in which electrons are progressively filled in 4f orbital are called
   (A) Lanthanoids (B) Halogens (C) Actinoids (D) Transition elements
   Ans (A)
7. Incorrect statement with reference to Ce(Z = 58)
   (A) Atomic size of Ce is more than that of Lu.
   (B) Ce shows common oxidation states of +3 and +4.
   (C) Ce^{4+} is a reducing agent.
   (D) Ce in +3 oxidation state is more stable than in +4.
   Ans (C)
8. A mixture of NaCl and $K_2Cr_2O_7$ is heated with conc. H_2SO_4, deep red vapours and formed. Which of the following statement is false?
   (A) The vapours contain CrO_2Cl_2 and Cl_2.
   (B) The vapours when passed into lead acetate in acetic acid gives a yellow precipitate.
   (C) The vapours give a yellow solution with NaOH.
   (D) The vapours contain CrO_2Cl_2 only.
   Ans (A)
9. Which of the following statement is wrong?
   (A) Metals in highest oxidation states are more stable in oxides than in fluorides,
   (B) All elements of 3d series exhibit variable oxidation states.
   (C) In highest oxidation states, the transition metals show acidic character.
   (D) Mn^{3+} and Co^{3+} are oxidizing agents in aqueous solution.
   Ans (B)

10. Which among the following is the strongest Ligand?
(A) CO (B) en (C) CN^- (D) NH_3
Ans (A)

11. Relative lowering of vapour pressure of a dilute solution of glucose dissolved in 1 kg of water is 0.002. The molality of the solution is
(A) 0.111 (B) 0.021 (C) 0.004 (D) 0.222
Ans (A)

12. One litre solution of $MgCl_2$ is electrolyzed completely by passing a current of 1A for 16 min 5 sec. The original concentration of $MgCl_2$ solution was (Atomic mass of Mg = 24)
(A) 0.5×10^{-3} M (B) 1.0×10^{-2} M (C) 5×10^{-3} M (D) 5×10^{-2} M
Ans (C)

13. An aqueous solution of $CuSO_4$ is subjected to electrolysis using inert electrodes. The pH of the solution will
(A) decrease
(B) increase or decrease depending on the strength of the current.
(C) increase
(D) remains unchanged
Ans (A)

14. Give : $E^0_{Mn^{+7}|Mn^{+2}} = 1.5$ V and $E^0_{Mn^{+4}|Mn^{+2}} = 1.2$ V, then $E^0_{Mn^{+7}|Mn^{+4}}$ is
(A) 1.7 V (B) 2.1 V (C) 0.3 V (D) 0.1 V
Ans (A)

15. The plot of $t_{1/2}$ v/s $[R]_0$ for a reaction is a straight-line parallel to x-axis. The unit for the rate constant of this reaction is
(A) L mol^{-1} s^{-1} (B) s^{-1} (C) mol L^{-1} s (D) mol L^{-1} s^{-1}
Ans (B)

16. The mass of AgCl precipitated when a solution containing 11.70 g of NaCl is added to a solution containing 3.4 g of $AgNO_3$ is [Atomic mass of Ag = 108, Atomic mass of Na = 23]
(A) 2.87 g (B) 6.8 g (C) 5.74 g (D) 1.17 g
Ans (A)

17. Two particles A and B are in motion. If the wavelength associated with 'A' is 33.33 nm, the wavelength associated with 'B' whose momentum is $\frac{1}{3}$rd of 'A' is
(A) 1.25×10^{-7} m (B) 1.0×10^{-7} m (C) 1.0×10^{-8} m (D) 2.5×10^{-8} m
Ans (B)

18. The first ionization enthalpy of the following elements are in the order:
(A) P < Si < C < N (B) Si < P < C < N (C) C < N < Si < P (D) P < Si < N < C
Ans (B)

19. Solubility of AgCl is least in
(A) 0.1 M $BaCl_2$ (B) 0.1 M $AlCl_3$ (C) 0.1 M NaCl (D) Pure water
Ans (B)

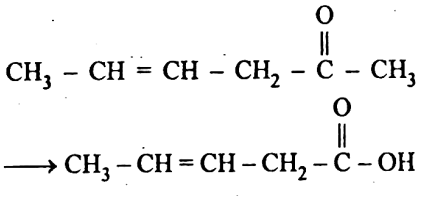
20. Which of the following equations does NOT represent Charles's law for a given mass of gas at constant pressure?

(A) $\log K = \log V + \log T$ (B) $\frac{d(\ln V)}{dT} = \frac{1}{T}$

(C) $\frac{V}{T} = K$ (D) $\log V = \log K + \log T$

Ans (A)

21. Which is the most suitable reagent for the following conversion?



(A) Benzoyl peroxide (B) Sn and NaOH solution

(C) Tollen's reagent (D) I_2 and NaOH solution

Ans (D)

22. Which of the following is least soluble in water at 298 K?

(A) $(CH_3)_2NH$ (B) $C_6H_5NH_2$ (C) CH_3NH_2 (D) $(CH_3)_3N$

Ans (B)

23. If Aniline is treated with 1 : 1 mixture of con. HNO_3 and con. H_2SO_4, p-nitroaniline and m-nitroani1ine are formed nearly in equal amounts. This is due to

(A) m & p directing property of $-NH_2$ group

(B) isomerization of some p-nitroaniline into m-nitroaniline

(C) m-directing property of $-NH_2$ group

(D) protonation of $-NH_2$ which causes deactivation of benzene ring

Ans (D)

24. In nucleic acids, the nucleotides are joined together by

(A) Phosphodisulphide linkage (B) Sulphodiester linkage

(C) Phosphoester linkage (D) Phosphodiester linkage

Ans (D)

25. Which of the following is generally water insoluble?

(A) Amylose (B) Glycine (C) Fibrous protein (D) Vitamin-C

Ans (C)

26. Which of the following possess net dipole moment?

(A) $BeCl_2$ (B) CO_2 (C) SO_2 (D) BF_3

Ans (C)

27. The number of π-bonds and σ-bonds present in naphthalene are respectively

(A) 5, 11 (B) 5, 20 (C) 6, 19 (D) 5, 19

Ans (D)

28. The reaction in which $\Delta H > \Delta U$ is

(A) $N_{2(g)} + 3H_{2(g)} \longrightarrow 2NH_{3(g)}\, N_{2(g)}$ (B) $CH_{4(g)} + 2O_{2(g)} \longrightarrow CO_{2(g)} + 2H_2O_{(l)}$

(C) $N_{2(g)} + O_{2(g)} \longrightarrow 2NO_{(g)}$ (D) $CaCO_{3(S)} \longrightarrow CaO_{(s)} + CO_{2(g)}$

Ans (D)

29. The number of moles of electron required to reduce 0.2 mole of $Cr_2O_7^{-2}$ to Cr^{+3}

(A) 12 (B) 0.6 (C) 1.2 (D) 6

Ans (C)

30. In the reaction $B(OH)_3 + 2H_2O \longrightarrow [B(OH)_4]^- + H_3\overset{+}{O}$

$B(OH)_3$ functions as

(A) Bronsted acid (B) Lewis acid (C) Protonic acid (D) Lewis base

Ans (B)

31. Match the following pKa values:

	Acid		pKa
(a)	Phenol	(i)	16
(b)	p-Nitrophenol	(ii)	0.78
(c)	Ethanol	(iii)	10
(d)	Picric acid	(iv)	7.1

	a	b	c	d
(A)	iii	i	iv	ii
(B)	iv	ii	iii	i
(C)	iii	iv	i	ii
(D)	ii	i	ii	iv

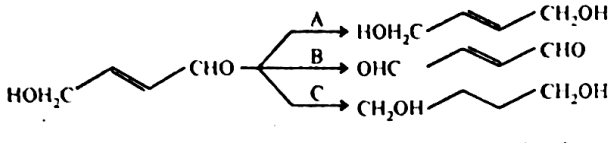
Ans (C)

32. Which of the following can be used to test the acidic nature of ethanol?

(A) $NaHCO_3$ (B) Na metal

(C) Blue litmus solution (D) Na_2CO_3

Ans (B)

33. 

The reagents A, B and C respectively are

(A) $NaBH_4$, PCC, H_2/Pd (B) H_2/Pd, alk. $KMnO_4$, $NaBH_4$

(C) H_2/Pd, PCC, $NaBH_4$ (D) $NaBH_4$, alk. $KMnO_4$, H_2/Pd

Ans (A)

34. Propanoic acid undergoes HVZ reaction to give chloropropanoic acid. The product obtained is

(A) weaker acid than propanoic acid (B) stronger than dichloropropanoic acid

(C) stronger acid than propanoic acid (D) as stronger as propanoic acid

Ans (C)

35. $P \xrightarrow{H_2/Pd-BaSO_4} Q \xrightarrow[(ii)\ dil.\ HCl]{(i)\ conc.\ NaOH} R + S$

R and S form benzyl benzoate when treated with each other. Hence, P is

(A) C_6H_5COCl (B) C_6H_5COOH (C) C_6H_5CHO (D) $C_6H_5CH_2OH$

Ans (A)

36. Which of the following is a network crystalline solid?

(A) NaCl (B) Ice (C) I_2 (D) AlN

Ans (D)

37. The number of atoms in 2.4 g of body centred cubic crystal with edge length 200 pm is (density = 10 g cm^{-3}, $N_A = 6 \times 10^{23}$ atoms/mol)

(A) 6×10^{23} (B) 6×10^{19} (C) 6×10^{22} (D) 6×10^{20}

Ans (C)

38. 1 mole of NaCl is doped with 10^{-5} mole of $SrCl_2$. The number of cationic vacancies in the crystal lattice will be

(A) 6.022×10^{23} (B) 12.044×10^{20} (C) 6.022×10^{18} (D) 6.022×10^{15}

Ans (C)

39. A non-volatile solute, 'A' tetramerises in water to the extent of 80%. 2.5 g of 'A' in 100 g of water, lowers the freezing point by 0.3 °C. the molar mass of Å in mol L^{-1} is (K_f for water = 1.86 K kg mol^{-1})

(A) 155 (B) 354 (C) 62 (D) 221

Ans (C)

40. Solution 'A contains acetone dissolved in chloroform and solution 'B' contains acetone dissolved in carbon disulphide. The type of deviations from Raoult's law shown by solutions A and B, respectively are

(A) negative and negative (B) negative and positive

(C) positive and positive (D) positive and negative

Ans (B)

41. Among the following, the main reactions occurring in blast furnace during extraction of iron from haematite are

i. $Fe_2O_3 + 3CO \longrightarrow 2Fe + 3CO_2$

ii. $FeO + SiO_2 \longrightarrow FeSiO_3$

iii. $Fe_2O_3 + 3C \longrightarrow 2Fe + 3CO$

iv. $CaO + SiO_2 \longrightarrow CaSiO_3$

(A) ii and iii (B) i and iv (C) i and ii (D) iii and iv

Ans (B)

42. Which of the following pair contains 2 lone pair of electrons on the central atom?

(A) XeF_4, NH_3 (B) SO_4^{2-}, H_2S (C) I_3^+, H_2O (D) H_2O, NF_3

Ans (C)

43. Which of the following statement is correct?

(A) F_2 oxidises H_2O to O_2 but Cl_2 does not. (B) Fluoride is a good oxidizing agent.

(C) Cl_2 oxidises H_2O to O_2 but F_2 does not. (D) Cl_2 is a stronger oxidizing agent than F_2.

Ans (A)

44. 0.1 mole of XeF_6 is treated with 1.8 g of water. The product obtained is

(A) $XeOF_4$ (B) $Xe + XeO_3$ (C) XeO_3 (D) XeO_2F_2

Ans (A)

45. In the reaction of gold with aquaregia, oxidation state of Nitrogen changes from

(A) +5 to +2 (B) +3 to +1 (C) +4 to +2 (D) +6 to +4

Ans (A)

46. Addition of excess of $AgNO_3$ to an aqueous solution of 1 mole of $PdCl_2 \cdot 4NH_3$ gives 2 moles of AgCl. The conductivity of this solution corresponds to

(A) 1 : 2 electrolyte (B) 1 : 4 electrolyte (C) 1 : 1 electrolyte (D) 1 : 3 electrolyte

Ans (A)

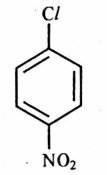
47. The formula of penta aquanitrato chromium (III) nitrate is,

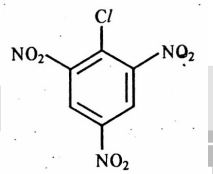
(A) $[Cr(H_2O)_5\ NO_3]\ (NO_3)_2$ (B) $[Cr(H_2O)_5NO_2]\ NO_3$

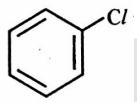
(C) $[Cr(H_2O)_6]\ (NO_3)_3$ (D) $[Cr(H_2O)_6]\ (NO_2)_2$

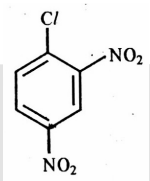
Ans (A)

48. Which of the following halide undergoes hydrolysis on warning with water/aqueous NaOH?

(A) 

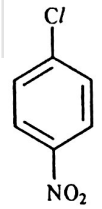
(B) 

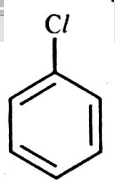
(C) 

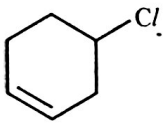
(D) 

Ans (B)

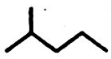
49. The compound having longest C – C*l* bond is

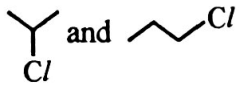
(A) 

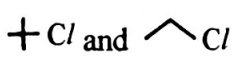
(B) CH_2=CH–C*l* (C) 

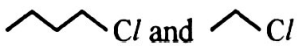
(D) 

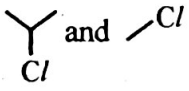
Ans (D)

50. The alkyl halides required to prepare  by Wurtz reaction are

(A) 

(B) 

(C) 

(D) 

Ans (A)

51. Which is a wrong statement?
(A) ln k vs $\frac{1}{T}$ plot is a straight line.
(B) presence of catalyst will not alter the value of Ea
(C) Rate constant k = Arrhenius constant A: if Ea = 0
(D) $e^{-Ea/RT}$ gives the fraction of reactant molecules that are activated at the given temp
Ans (B)

52. 1 L of 2 M CH_3COOH is mixed with 1 L of 3M C_2H_5OH to form an ester. The rate of the reaction with respect to the initial rate when each solution is diluted with an equal volume of water will be
(A) 0.5 times (B) 4 times (C) 0.25 times (D) 2 times
Ans (C)

53. Which of the following is an example of homogeneous catalysis?
(A) Oxidation of SO_2 in lead chamber process (B) manufacture of NH_3 by Haber's process
(C) oxidation of NH_3 in Ostwald's process (D) oxidation of SO_2 in contact process
Ans (A)

54. Critical Micelle concentration for a soap solution is 1.5×10^{-4} mol L^{-1}. Micelle formation is possible only when the concentration of soap solution in mol L^{-1} is
(A) 7.5×10^{-5} (B) 1.1×10^{-4} (C) 2.0×10^{-3} (D) 4.6×10^{-5}
Ans (C)

55. Oxidation state of copper is +1 in
(A) Azurite (B) Chalcopyrite (C) Malachite (D) Cuprite
Ans (D)

56. The metal nitrate that liberates NO_2 on heating
(A) KNO_3 (B) $RbNO_3$ (C) $NaNO_3$ (D) $LiNO_3$
Ans (D)

57. Which of the following is NOT true regarding the usage of hydrogen as a fuel?
(A) Combustion product is ecofriendly.
(B) Hydrogen gas can be easily liquefied and stored.
(C) High calorific value
(D) The combustible energy of hydrogen can be directly converted to electrical energy in a fuel cell.
Ans (B)

58. Resonance effect is not observed in
(A) CH_2=CH–Cl (B) CH_2=CH–CH_2–NH_2
(C) CH_2=CH–CH=CH_2 (D) CH_2=CH–C≡N
Ans (B)

59. 2-butyne is reduced to trans-but-2-ene using
(A) H_2|Pd–C (B) Zn in dil. HCl (C) H_2|Ni (D) Na in liq. NH_3
Ans (D)

60. Eutrophication causes
(A) reduction in dissolved oxygen (B) decreases BOD
(C) increase of nutrients in water (D) reduction in water pollution
Ans (A)

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