

CET – 2012
MOCK PAPER - 3

1. Which is/are the correct state about oxidation states of group – 14 element :

- a) + 2, + 4
- b) + 1, + 2
- c) + 3, + 4
- d) Only + 4

2. NaCN is used in the extraction of

- a) Iron
- b) Copper
- c) Magnesium
- d) Gold

3. The noble gas which has ionisation energy and atomic size closer to that of oxygen is :

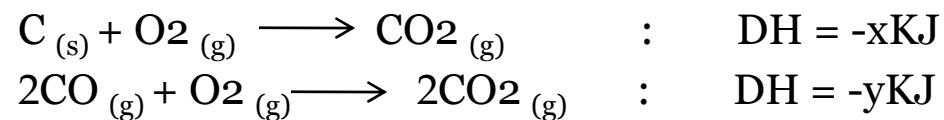
- a) Argon
- b) Helium
- c) Krypton
- d) Xenon

4. The transition metal ion with the highest magnetic moment will be the one with the configuration of :
- a) $3d^2$
 - b) $3d^3$
 - c) $3d^8$
 - d) $3d^9$
5. An example of bidentate
- a) Cyano
 - b) Aquo
 - c) Oxalato
 - d) EDTA
6. Δ 0.01 m ammonia solution is 5% ionised. The concentration of OH ions is:
- a) 0.005 m
 - b) 0.0001 m
 - c) 0.0005 m
 - d) 0.05 m

7. The angle between Covalent bonds in maximum :

- a) CH_4
- b) BF_3
- c) NH_3
- d) H_2O

8. Given that



The standard enthalpy of formation of carbon monoxide is :

- a) $y - 2x$
- b) $2x - y / 2$
- c) $y - 2x / 2$
- d) $2x - y$

9. According to molecular orbital theory, which of the following statements about magnetic nature and bond order of O₂ is correct :
- a) Paramagnetic and bond order is 2
 - b) Diamagnetic and bond order is 2
 - c) Diamagnetic and bond order is 1.5
 - d) Paramagnetic and bond order is 1.0
10. At 27° C, the ratio of R.M.S velocities of ozone to oxygen is :
- a) $\sqrt{3}/2$
 - b) $\sqrt{4}/3$
 - c) $\sqrt{2}/3$
 - d) 0.25
11. Butter is a colloid in which :
- a) Fat is dispersed in water
 - b) Fat is dispersed in fat
 - c) Water is dispersed in fat
 - d) None

12. We can maintain the velocity of a chemical reaction constant by :
- a) Maintain a constant temperature
 - b) Keeping the contents stirred
 - c) Doing both
 - d) None of the above methods
13. For a certain reaction, the rate constant at 300K is $2.1 \times 10^6 \text{ sec}^{-1}$.
If activation energy of the reaction is zero, then the value of rate constant at 320K will be :
- a) Zero
 - b) $2.1 \times 10^6 \text{ sec}^{-1}$
 - c) $4.1 \times 10^6 \text{ sec}^{-1}$
 - d) $6.3 \times 10^6 \text{ sec}^{-1}$
14. The weight of oxalic acid present in 500 CC of 0.2N solution is :
- a) 12.5g
 - b) 6.3g
 - c) 1.26g
 - d) 1.3

15. Which of the following gas contains the same number of molecules as 16g of oxygen :
- a) 16g O_3
 - b) 16g SO_2
 - c) 32g SO_2
 - d) All the above
16. The solubility product values of $Al(OH)_3$, $Ca(OH)_2$, $Fe(OH)_2$ and $Mg(OH)_2$ are 10^{-33} , 10^{-6} , 10^{-14} and 10^{-11} respectively. Which among them is highly soluble salt ?
- a) $Fe(OH)_2$
 - b) $Mg(OH)_2$
 - c) $Ca(OH)_2$
 - d) $Al(OH)_3$
17. A white crystalline solid was heated with concentrated H_2SO_4 and colourless gaseous mixture was collected in a jar. The upper portion burns with a pale blue flame and the lower portion turns lime water milky. The crystalline solid is :
- a) Na_2SO_4
 - b) $HCOONa$
 - c) $C_{12}H_{22}O_{11}$
 - d) $H_2C_2O_4$

18. When tomato is placed in dilute H_2SO_4 , it :

- a) Shrinks
- b) Swells
- c) Dissolves
- d) No change

19. Which of the following forms of water has least entropy?

- a) Ice
- b) Liquid water
- c) Water vapour
- d) All of them

20. If the solution contains 'n' moles of solute and 'N' moles of solvent, the mole fraction of the solute in the solution is equal to :

- a) $\frac{N}{n+N}$
- b) $\frac{n}{N+n}$
- c) $\frac{N+n}{n}$
- d) $\frac{N+n}{N}$

21. Select the Pka value of the strongest acid from the following :
- a) 1.0
 - b) 3.0
 - c) 2.0
 - d) 4.5
22. Vander waal's equation is almost identical with ideal gas equation at :
- a) High pressure and low temperature
 - b) High temperature and low pressure
 - c) High pressure and high temperature
 - d) Low temperature and low pressure
23. The radius ratio of a crystalline solid is 0.6. It's expected co-ordination number is:
- a) 12
 - b) 8
 - c) 4
 - d) 6

24. The decreasing order of acidic strengths among the following is
- a) CH_3COOH b) CCl_3COOH c) CF_3COOH d) CBr_3COOH
- a) $c > b > d > a$
b) $b > c > a > d$
c) $d > c > b > a$
d) $c > a > d > b$
25. The number of Π bonds in $\text{H}_2\text{C} = \text{CH} - \text{CH} = \text{CH} - \text{C} = \text{C} - \text{H}$ is :
- a) 4
b) 3
c) 2
d) 5
26. The oxygen atom of phenol is:
- a) Shows only $-I$ effect
b) Shows only $+R$ effect
c) $+R$ effect dominates over $-I$ effect
d) $-I$ effect dominates over $+R$ effect

27. Methyl amine reacts with alkyl halides to give quaternary ammonium compound, as the end product. During this reaction the number of molecules of alkyl halide required is:
- a) 1
 - b) 2
 - c) 3
 - d) 4
28. In the conversion of methyl amine to methyl alcohol, the acid used is :
- a) HNO_2
 - b) $\text{HNO}_3 / \text{H}_2\text{SO}_4$
 - c) HNO_3
 - d) $\text{HCl} / \text{HNO}_3$
29. A crystal having lattice parameters $a = b \neq c$, β belong to the crystal system :
- a) Monoclinic
 - b) Orthorhombic
 - c) Rhombohedral
 - d) Tetragonal

30. An alcohol cannot be converted to alkyl halide by :

- a) PCl_3
- b) Cl_2
- c) PCl_5
- d) SOCl_2

31. Which is the $\text{H}_3\text{C} - \underset{\text{C}}{\overset{\text{C}}{\text{C}}} - \text{CH}_2 - \text{Cl}$:

- a) 1 - Chloro - 2, 2 - diethyl propane
- b) 3 - Chloro - 2, 2 - diethyl propane
- c) 1 - Chloro - 2, 2 - diethyl - 2 - methyl ethane
- d) 1 - Chloro - 2 - ethyl - 2 - methyl butane

32. Carboxylic acid is :

- a) Acetic acid
- b) Salicylic acid
- c) Phenol
- d) Formic acid

33. Magnesium is not present in :

- a) Cryolite
- b) Dolomite
- c) Carmelite
- d) Epson salt

34. Mercerised cotton is :

- a) Cotton which will not shrink
- b) Cotton treated with Conc. H_2SO_4
- c) Cotton treated with concentrated alkate solution
- d) Cotton treated with nitric acid

35. Pick out the one not belonging to the class :

- a) Lauric acid
- b) Palmitic acid
- c) Oleic acid
- d) Stearic acid

35. Pick out the one not belonging to the class :

- a) Lauric acid
- b) Palmitic acid
- c) Oleic acid
- d) Stearic acid

36. In the reaction ; $R - X \xrightarrow{KCN(\text{alcohol})} A \xrightarrow{\text{dil.HCl}} B$

- a) Alkyl halide
- b) Aldehyde
- c) Carboxylic acid
- d) Ketone

37. Natural rubber is made up of :

- a) Cis - 1 , 2 - isoprene units
- b) Cis - 1 , 3 - isoprene units
- c) Cis - 1 , 4 - isoprene units
- d) Cis - 1 , 5 - isoprene units

38. A compound gives negative test with ninhydrin and positive test benedict's solution, it is:

- a) A protein
- b) A lipid
- c) A mono saccharide
- d) An amino acid

39. Which of the following aldehydes can give Cannizzaro's reaction ?

- a) $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CHO}$
- b) $\text{CH}_3 - \text{CH}_2 - \underset{\begin{array}{c} | \\ \text{CH}_3 \end{array}}{\text{CH}} - \text{CHO}$
- c) $(\text{CH}_3)_2 - \text{CH} - \text{CH}_2 - \text{CHO}$
- d) $(\text{CH}_3)_3 - \text{C} - \text{CHO}$

40. Benzoin is :

- a) Hydroxy aldehyde
- b) Hydroxy ketone
- c) A compound containing aldehydic and ketonic groups
- d) An unsaturated acid

41. The angle strain in cyclo pentane is :
- a) $24^{\circ} 44^1$
 - b) $29^{\circ} 16^1$
 - c) $9^{\circ} 44^1$
 - d) $0^{\circ} 44^1$
42. Corrosion of iron is essentially an electro chemical phenomenon where the cell reactions are:
- a) Fe is oxidized to Fe^{3+} & H_2O is reduced to O_2^{2-}
 - b) Fe is oxidized to Fe^{2+} & H_2O is reduced to O_2^-
 - c) Fe is oxidized to Fe^{2+} & H_2O is reduced to OH^- ions
 - d) Fe is oxidized to Fe^{3+} & H_2O is reduced to O_2
43. Which of the following could act as a propellant for rocket?
- a) liquid N_2 + liq. O_2
 - b) liq. H_2 + liq. N_2
 - c) liq. O_2 + liq. Argon
 - d) liq. H_2 + liq. O_2

44. Sucrose molecule is made up of :

- a) A glucopyranose & a fructopyranose
- b) A glucopyranose & a fructofuranose
- c) A glucofuranose & a fructopyranose
- d) A glucofuranose & a fructofuranose

45. One of the essential α – amino acid is:

- a) Lysine
- b) Glycine
- c) Serine
- d) Proline

46. Haemoglobin is an iron containing:

- a) Hormone
- b) Antibody
- c) Vitamin
- d) protein

47. 40 mg of pure sodium hydroxide is dissolved in 10 litres of distilled water. The pH of the solution is:
- a) 9.0
 - b) 10.0
 - c) 11.0
 - d) 12.0
48. the equilibrium constant for a reaction is 100. ($R = 2 \text{ Cal k}^{-1}\text{mol}^{-1}$). Then standard free energy change at 300K is :
- a) 2.745 KCal
 - b) - 2.764 KCal
 - c) 2.674 KCal
 - d) - 2.542 Kcal
49. The indicator used in the titration of iodine solution against sodium thio sulphate is:
- a) Litmus
 - b) Startch
 - c) Methyl orange
 - d) Methyl red

50. A simplest formula of a compound contains 50% element X (atomic mass 10) & 50% element Y (atomic mass 20) is:

- a) XY
- b) XY₂
- c) X₂Y
- d) X₂Y₃

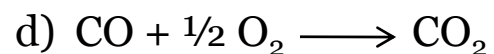
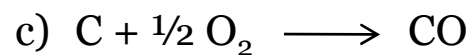
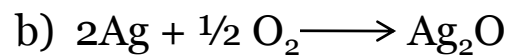
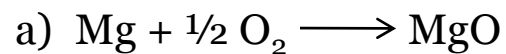
51. In kjeldahl's method, CuSO₄ acts as :

- a) Oxidising agent
- b) Catalytic agent
- c) Reducing agent
- d) Hydrolysing agent

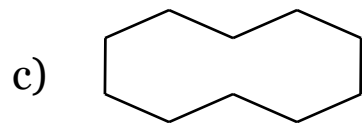
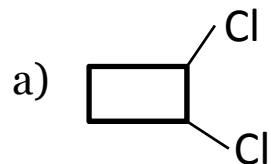
52. In the reaction, $2 \text{MnO}_4^- + 6\text{H}^+ + 5\text{NO}_2^- \longrightarrow 2\text{Mn}^{2+} + 3\text{H}_2\text{O} + 5\text{NO}_3^-$

- a) MnO₄⁻ is reduced
- b) Oxidation number of Mn decreases from + 7 to + 2
- c) Oxidation number of N decreases from + 3 to + 5
- d) All the above statements are correct

53. ΔG° Vs T plot in the ellingham's diagram slopes downwards for the reaction:



54. Which of the following will form geometrical isomers:



d) All of these

55. In the 3d – series, as we move from Scandium (Sc) to Zinc (Zn), the paramagnetic character :
- a) Increases
 - b) Decreases
 - c) First increases to maximum and then decreases
 - d) First decreases to minimum and then increases
56. Benzamide is obtained from:
- a) Benzaldehyde and hydroxyl amine
 - b) Benzaldehyde and ammonia
 - c) Salicylic acid ammonia
 - d) Benzoic acid and ammonia
57. The e.m.f for the cell reaction $\text{Zn} + \text{Cu}^{2+} \longrightarrow \text{Zn}^{2+} + \text{Cu}$ is 1.10 V. when the concentration ratio of $\text{Zn}^{2+} / \text{Cu}^{2+}$ becomes 100, the e.m.f of the cell is :
- a) Decreased by 0.0295V
 - b) Increased by 0.0295V
 - c) Decreased by 0.059V
 - d) Increased by 0.059V

58. For a second order reaction, half – life period and the initial concentration are related by:

- a) $t_{1/2} \propto a$
- b) $t_{1/2} \propto 1/a$
- c) $t_{1/2} \propto 1/a^2$
- d) $t_{1/2} \propto 1/\sqrt{a}$

59. 12g of urea is dissolved in 1 litre of water and 68.4g of Sucrose is dissolved in 1 litre of water. The lowering of vapour pressure of first case is :

- a) Equal to second
- b) Greater than second
- c) Less than second
- d) Double that of second

60. Formation of He₂ molecule is not possible because:

- a) $N_b > N_a$
- b) $N_b < N_a$
- c) $N_b = N_a$
- d) $N_b - N_a$ is -ve