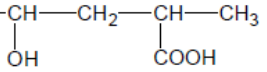
KARNATAKA COMMON ENTRANCE EXAMINATION

CHEMISTRY SAMPLE PAPER

1. IUPAC name of  is

(1) 4-hydroxy 1 methyl pentanoic acid (2) 4-hydroxy 2 methyl pentanoic acid
(3) 2-hydroxy 4 methyl pentanoic acid (4) 2-hydroxy 2 methyl pentanoic acid

Ans: (2)

2. Alkali metals have negative reduction potential and hence they behave as
(1) Oxidising agents (2) Lewis bases (3) Reducing agents (4) Electrolytes

Ans: (3)

3. Which of the following gases has the highest value of RMS – velocity at 298 K?
(1) CH_4 (2) CO (3) Cl_2 (4) CO_2

Ans: (1)

4. Cycloalkane formed when 1, 4-dibromopentane is heated with Sodium is
(1) Methyl cyclobutane (2) Cyclopentane
(3) Cyclobutane (4) Methyl cyclopentane

Ans: (2)

5. In the reaction, $2FeSO_4 + H_2SO_4 + H_2O_2 \rightarrow Fe_2(SO_4)_3 + 2H_2O$, the oxidizing agent is
(1) $FeSO_4$ (2) H_2SO_4
(3) H_2O_2 (4) Both H_2SO_4 and H_2O_2

Ans: (3)

6. Given Thermochemical equation, $2H_{2\,(g)} + O_{2\,(g)} \rightarrow 2H_2O_{(\ell)}$; $\Delta H = -571.6$ kJ. Heat of decomposition of water is
(1) -571.6 kJ (2) +571.6 kJ (3) -1143.2 kJ (4) +285.8 kJ

Ans: (4)

7. In Buna-S, the symbol "Bu" stands for
(1) 1-Butene (2) n-Butene (3) 2-Butene (4) Butadiene

Ans: (4)

8. The electronic configuration of Cu^{2+} ion is
(1) [Ar] $3d^8\ 4s^1$ (2) [Ar] $3d^9\ 4s^o$ (3) [Ar] $3d^7\ 4s^2$ (4) [Ar] $3d^8\ 4s^o$

Ans: (2)

9. The yield of the products in the reaction, $A_{2\,(g)} + 2B_{(g)} \rightleftharpoons C_{(g)} + Q$. kJ would be higher at
(1) High temperature and high pressure (2) High temperature and low pressure
(3) Low temperature and high pressure (4) Low temperature and low pressure

Ans: (3)

10. Mesomeric effect involves
(1) delocalisation of π - electrons
(2) delocalisation of σ - electrons
(3) partial displacement of electrons
(4) delocalisation of π and σ electrons

Ans: (1)

11. Which one of the following sets of ions represents the collection of isoelectronic species?
(1) K^+, Cl^-, Mg^{2+}, Sc^{3+}
(2) Na^+, Ca^{2+}, Sc^{3+}, F^-
(3) K^+, Ca^{2+}, Sc^{3+}, Cl^-
(4) Na^+, Mg^{2+}, Al^{3+}, Cl^-

Ans: (3)

12. Adsorption theory is applicable for
(1) Homogeneous catalysis
(2) Heterogeneous catalysis
(3) Autocatalysis
(4) Induced catalysis

Ans: (2)

13. Methane can be converted into Ethane by the reactions
(1) Chlorination followed by the reaction with alcoholic KOH
(2) Chlorination followed by the reaction with aqueous KOH
(3) Chlorination followed by Wurtz reaction
(4) Chlorination followed by decarboxylation

Ans: (3)

14. Intramolecular Hydrogen bonding is formed in
(1) H_2O
(2) Salicyladehyde
(3) NH_3
(4) Benzophenone

Ans: (2)

15. If 50% of the reactant is converted into a product in a first reaction in 25 minutes, how much of it would react in 100 minutes?
(1) 93.75%
(2) 87.5%
(3) 75%
(4) 100%

Ans: (1)

16. The number of optical isomers of the compound $CH_3 - CHBr - CHBr - COOH$ is
(1) 0
(2) 1
(3) 3
(4) 4

Ans: (4)

17. When limestone is heated, CO_2 is given off. The metallurgical operation is
(1) Smelting
(2) Reduction
(3) Calcination
(4) Roasting

Ans: (3)

18. The rate of reaction increases with rise in temperature because of
(1) increase in number of activated molecules
(2) increase in energy of activation
(3) decrease in energy of activation
(4) increase in the number of effective collisions

Ans: (1, 3 & 4)

19. Meso compounds do not show optical activity because
(1) they do not contain chiral carbon atoms
(2) they have non-super imposable mirror images
(3) they contain plane of symmetry
(4) they do not contain plane of symmetry

Ans: (3)

20. When formic acid is heated with concentrated H_2SO_4, the gas evolved is
(1) only CO_2 (2) only 'CO'
(3) a mixture of 'CO' and 'CO_2' (4) a mixture of 'SO_2' and 'CO_2'

Ans: (2)

21. Temperature coefficient of a reaction is '2'. When temperature is increased from 30°C to 90°C, the rate of reaction is increased by
(1) 60 times (2) 64 times (3) 150 times (4) 400 times

Ans: (2)

22. Conversion of benzene to acetophenone can be brought by
(1) Wurtz reaction (2) Wurtz-Fittig's reaction
(3) Friedel Crafts alkylation (4) Friedel Crafts acylation

Ans: (4)

23. Excess of PCl_5 reacts with concentrated H_2SO_4 giving
(1) Chlorosulphuric acid (2) Sulphurous acid
(3) Sulphury chloride (4) Thionyl chloride

Ans: (3)

24. An example for a neutral buffer is
(1) Ammonium hydroxide and Ammonium chloride
(2) Acetic acid and Sodium acetate
(3) Acetic acid and Ammonium hydroxide
(4) Citric acid and Sodium citrate

Ans: (3)

25. Least energetic conformation of cyclohexane is
(1) Chain conformation (2) Boat conformation
(3) Cis conformation (4) E-z form

Ans: (1)

26. Which of the following is employed in flash tubes in photograph?
(1) Ar (2) Ne (3) Kr (4) Xe

Ans: (4)

27. Conjugate base of $H_2PO_4^-$ is
(1) HPO_4^- (2) HPO_4 (3) H_3PO_4 (4) PO_4^{3-}

Ans: (2)

28. An alkyl bromide (X) reacts with Sodium in ether to form 4, 5-diethyl octane, the compound 'X' is

(1) $CH_3(CH_2)_3Br$ (2) $CH_3(CH_2)_5Br$

(3) $CH_3(CH_2)_3CH(Br)CH_3$ (4) $CH_3 - (CH_2)_2 - CH(Br) - CH_2 - CH_3$

Ans: (4)

29. Which one of the following shows highest magnetic moment?

(1) Fe^{2+} (2) CO^{2+} (3) Cr^{3+} (4) Ni^{2+}

Ans: (1)

30. The emf of a galvanic cell constituted with the electrodes Zn^{2+} |Zn (-0.76 V) and Fe^{2+}|Fe(-0.41V) is

(1) -0.35 V (2) +1.17 V (3) +0.35 V (4) -1.17 V

Ans: (3)

31. Which of the following pairs are correctly matched?

	Reactants	**Products**
I.	$RX + AgOH_{(aq)}$	RH
II.	$RX + AgCN_{(alco)}$	RNC
III.	$RX + KCN_{(alco)}$	RNC
IV.	$RX + Na_{(ether)}$	R-R

1) I alone 2) I and II 3) II and III 4) II and IV

Ans: (4)

32. In a transition series, with increase in atomic-number, the paramagnetism

1) increases gradually
2) decreases gradually
3) first increases to a maximum and then decreases
4) first decreases to a minimum and then increases

Ans: (3)

33. Identify a species which is 'NOT' a Bronsted acid but a Lewis acid.

1) BF_3 2) H_3^+O 3) NH_3 4) HCl

Ans: (1)

34. The compound formed when calcium acetate and calcium formate is dray distilled.

1) Acetone 2) Acetaldehyde 3) Benzaldehyde 4) Acetophenone

Ans: (2)

35. d^2sp^3 hybridisation of the atomic orbitals gives

1) Square planar structure 2) Triangular structure
3) Tetrahedral structure 4) Octahedral structure

Ans: (4)

36. The pH of 10^{-8} M HCl solution is

1) 8 2) 6.9586 3) More than 8 4) Slightly more than 7

Ans: (2)

37. Which of the following is strongly acidic?

1) Phenol 2) o-cresol 3) p-nitrophenol 4) p-cresol

Ans: (3)

38. A group of atoms can function as a ligand only when
1) it is a small molecule
2) it has an unshared electron pair
3) it is a negatively charged ion
4) it is a positively charge ion
Ans: (2)

39. Which of the following is 'NOT' a colligative property?
1) Elevation in boiling point
2) Depression in freezing point
3) Osmotic pressure
4) Lowering of vapour pressure
Ans: (4)

40. Acetone and Propanal are
1) Functional isomers
2) Position isomers
3) Geometrical isomers
4) Optical isomers
Ans: (1)

41. Which of the following is diamagnetic?
1) H_2^+
2) He_2^+
3) O_2
4) N_2
Ans: (4)

42. 3 gms of urea is dissolved in 45 gms of H_2O. The relative lowering in vapour pressure is
1) 0.05
2) 0.04
3) 0.02
4) 0.01
Ans: (3)

43. The reagent used to distinguish between acetaldehyde and benzaldehyde is
1) Tollen's reagent
2) Fehling's solution
3) 2-4-dinitrohenyl hydrazine
4) Semicarbazide
Ans: (2)

44. Metallic luster is due to
1) high density of metals
2) high polish on the surface of metals
3) reflection of light by mobile electrons
4) chemical inertness of metals
Ans: (3)

45. Which of the following aqueous solutions will exhibit highest boiling point?
1) 0.01 M urea
2) 0.01 M KNO_3
3) 0.01 M Na_2SO_4
4) 0.015M $C_6H_{12}O_6$
Ans: (3)

46. Which one of the following gives amine on heating with amide?
1) Br_2 in aqueous KOH
2) Br_2 on alcoholic KOH
3) Cl_2 in Sodium
4) Sodium in Ether
Ans: (1)

47. The number of antibonding electrons present in O_2^- molecular ion is
1) 8
2) 6
3) 5
4) 4
Ans: (3)

48. The process is spontaneous at the given temperature, if
1) ΔH is +ve and ΔS is –ve
2) ΔH is –ve and ΔS is +ve
3) ΔH is +ve and ΔS is +ve
4) ΔH is +ve and ΔS is equal to zero
Ans: (2)

49. Glucose when reduced with HI and Red Phosphorus gives
1) n-hexane
2) n-heptane
3) n-pentane
4) n-octane
Ans: (1)

50. The stability of a Lyophobic colloid is due to
1) Adsorption of covalent molecules on the colloid
2) The size of the particles
3) The charge on the particles
4) Tyndall effect
Ans: (1)

51. Oils are liquids at room temperature since they contain higher percentage of
1) Oleates 2)Palmitates 3) Stearates 4) Myristates
Ans: (1)

52. Which of the following cations will have minium flocculation value for arsenic sulphide sol?
1) Na^+ 2) Mg^{2+} 3) Ca^{2+} 4) Al^{3+}
Ans: (4)

53. The value of entropy of solar system is
1) increasing 2) decreasing 3) constant 4) zero
Ans: (1)

54. In face centred cubic lattice, a unit cell is shared equally by how many unit cells?
1) 6 2) 4 3) 2 4) 8
Ans: (4)

55. The number of disulphide linkages present in Insulin are
1) 4 2) 3 3) 2 4) 1
Ans: (2)

56. The process of zone refining is used in the purification of
1) Al 2) Ge 3) Cu 4) Ag
Ans: (2)

57. The number of water molecules present in a drop of water weighing 0.018 gm is
1) 6.022×10^{26} 2) 6.022×10^{23} 3) 6.022×10^{19} 4) 6.022×10^{20}
Ans: (4)

58. Empirical formula of a compound is CH_2O and its molecular mass is 90, the molecular formula of the compound is
1) $C_3H_6O_3$ 2) $C_2H_4O_2$ 3) $C_6H_{12}O_6$ 4) CH_2O
Ans: (1)

59. Hybridised states of carbon in Graphite and Diamond are respectively
1) sp^3, sp^3 2) sp^3, sp^2 3) sp^2, sp^2 4) sp^2, sp^3
Ans: (4)

60. The mass of 112 cm^3 of NH_3 gas at STP is
1) 0.085 g 2) 0.850 g 3) 8.500 g 4) 80.500 g
Ans: (1)