

PART – I

CHOOSE THE CORRECT ANSWER

30X1=30

1. Energy of hydrogen atom in the second orbit is _____
- a. -328KJ/mol b. -1312 KJ/mol c. 984 KJ/mol d. -146KJ/mol
2. The bond length of C-C in ethane _____
- a. 1.44 \AA b. 1.98 \AA c. 2.28 \AA d. 1.54 \AA
3. Which radio active element discover by Marie Curie _____
- a. U b. Po c. Th d. Sr
4. Composition of nichrome
- a. Cr=65%, Fe=35% b. Cr=15% Ni=60% Fe=25%
- c. Cr=20-35%, Co=40-80%, Ni=0.25%, C=0.75-2.5% d. Cr=11-13%, C=0.1-0.4%, Fe=73%, Ni=8%
5. Which one of the following used to identification of chloride ions
- a. ZnCO_3 b. Al_2O_3 c. AgNO_3 d. CuSO_4
6. _____ used as a power source in long mission space probes.
- a. U-235 b. Pu-238 c. Cm-98 d. No -102
7. Anti-tumour drug in medicine is _____
- a. tripolyphosphate b. 2,2'-bipyridyl
- c. Al (Oxime)₃ d. cis [Pt (NH₃)₂ Cl₂]
8. ${}_{17}\text{Cl}^{37}$ (_____, n) ${}_{18}\text{Ar}^{38}$
- a. α b. β c. D d. n
9. Coordination number of BN is _____
- a. 8 b. 6 c. 4 d. 3

10. Calculate the ΔH_{vap} of H_2S , the boiling point of H_2S is -59.6°C

- a. 30.71 KJ mol^{-1} b. $29.376\text{ KJ mol}^{-1}$ c. 18.74 KJ mol^{-1} d. -1312 KJ mol^{-1}



11. In the reversible reaction $2\text{HI} \rightleftharpoons \text{H}_2 + \text{I}_2$, K_p is

- a) greater than K_c b) less than K_c c) Equal to K_c d) Zero

12. Order of the following reaction is $\text{H}_2\text{O}_2 + 2\text{I}^- + 2\text{H}^+ \longrightarrow \text{I}_2 + 2\text{H}_2\text{O}$

- a. 5 b. 4 c. 3 d. 2

13. $2\text{H}_2\text{O}_2 \longrightarrow 2\text{H}_2\text{O} + \text{O}_2$ negative catalyst is _____

- a. Alcohol b. glycerine c. MnO_2 (d) Fe/Mo

14. Unit of k (kappa) is _____

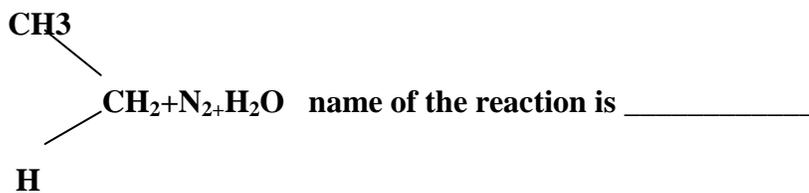
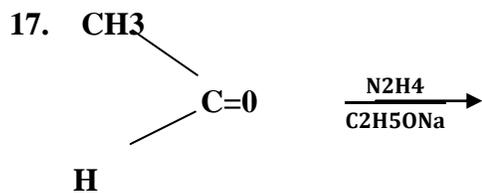
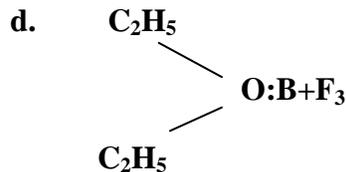
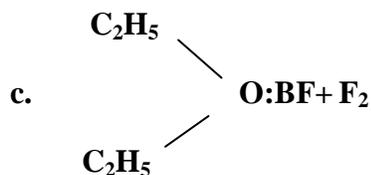
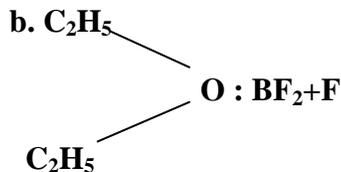
- a. Siemen b. mho c. S.m^{-1} d. All of these

15. How many resonance structure possible in phenolate ion

- a. 3 b. 5 c. 2 d. 4

16. $\text{C}_2\text{H}_5\text{-O-C}_2\text{H}_5 + \text{BF}_3 \longrightarrow ?$

- a. $(\text{C}_2\text{H}_5)_2\text{-O} : \text{BF}_3$

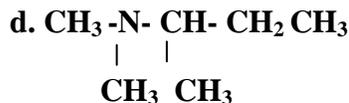
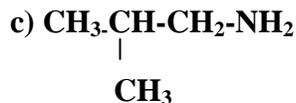
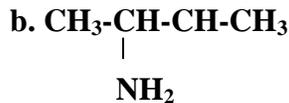
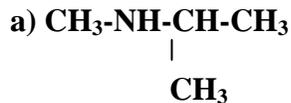


- a. claisen reaction

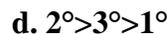
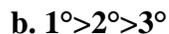
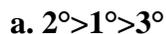
- b. Novanagal reaction

- c. wolfkrisshnar reaction

- d. HVZ reaction



29. Boiling point of amine on the bases of hydrogen bonding ?



30. Molecular formula of Galactose



PART –II

ANSWER ANY FIFTEEN QUESTION OF THE FOLLOWING

15X3=45

31. What is the significance of negative electronic energy?

32. Calculate the effective nuclear charge of 4s electron in K atom.

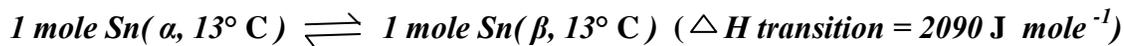
33. Write any three uses of orthophosphoric acid.

34. Write the equation effect of heat on copper.

35. Write the nuclear reaction taking place in star.

36. What is mean by unit cell.? draw the structure.

37. Calculate the entropy change of phase transitions reaction of following.



38. Write the equilibrium constant for HI formation reaction.

39. Write characteristics of first order reaction.

40. What are the factors affecting adsorption.

41. Write a note on p-type semi-conductore.

42. Distinguish structural , Geometrical isomers.

43. How nitro glycerine is prepared.

44. Define order of reaction.

45. What is mean by perkins reaction?

46. What happens when calcium salt of fatty acid is heated.

47. Write Sandmeyer reaction.

48. How is polystyrene prepared. Write uses.

49. Identify the product of the following: $C_2H_5OH + NH_3 \xrightarrow[360^\circ C]{Al_2O_3} ?$

50. Explain the structure and hybridization of IF_5 .

51. How does gold react with aqua regia?

PART – III

ANSWER ANY SEVEN QUESTIONS AT LEAST TWO QUESTIONS WRITE EACH SECTION

7X5=35

SECTION – A

52. Draw the molecular orbital diagram of O_2 molecule.

53. Mention the ore and extraction of gold by Mac-Arthur and Forrest's cyanide process.

54. What is meant by lanthanide contraction and write its causes and consequences.

55. Explain the function of chlorophyll in natural process.

SECTION – B

56. Define the following terms: i) standard free energy ii) standard entropy.

57. State Le Chatelier's principle, How temperature and pressure affect the equilibrium.

58. Show that for a first order reaction, the time required for 99.9% completion of the reaction is 10 times that required for 50% completion.

59. Write the IUPAC convention of cell diagram.

SECTION – C

60. Write the difference between anisole and diethylether.

61. Which of the compound gives the following product by Clemmensen reduction.

i) 2-methylpropane. ii) ethyl benzene. iii) diphenyl methane.

62. How does the following conversion take place.

i) salicylic acid to aspirin. ii) salicylic acid to methyl salicylate. iii) lactic acid to lactide.

63. Write briefly on antibiotics? In what way antiparasitics are helpful?

PATR – IV

ANSWER ANY FOUR QUESTION FROM THE FOLLOWING Q.NO 70 IS COMPULSORY

64. a. Calculate the ionic radii of K^+ and Cl^- ions in KCl crystal. The inter nuclear distance between K^+ and Cl^- ions are found to be 3.14\AA .
- b. Describe in detail how noble gases are isolated from air?
- 65.a. Explain the structure and hybridization of any two octahedral complexes by using VB theory.
- b. The decay constant for ${}^6C^{14}$ is $2.31 \times 10^{-4} \text{ year}^{-1}$ calculate the half life period.
66. a. i) write Braggs equation? ii) Explain braggs spectrometer method
- b. write General characteristics of catalytic reactions
67. a. what is common ion effect? Explain with two equation.
- b. How to calculate emf of half cell.
68. a. Describe the D, L-system of designation of configurations.
- b. Explain the mechanism of esterification reaction.
69. a. Explain the mechanism of Hoffman bromamide reaction.
- b. How peptide bond s form? Explain with equation.
- 70.a. Organic compound A with molecular formula C_6H_6 react with compound B molecular formula C_3H_6 in the presence of anhydrous $AlCl_3$ to produce compound C (C_9H_{12}) and it oxidized in air to produce compound D ($C_9H_{12}O_2$), compound D react with HCl it produce compound E (C_6H_6O). Find A,B,C,D and E Explain the reaction.
- b. Element A belongs to group number 6 period number 4 it present in iron mixed ore B. A on heating at $2000^\circ C$ it produce oxide compound C. A react with con H_2SO_4 produce sulphate compound D and liberate gas E . Find A,B,C,D and E Explain the reaction.
- (OR)
- c. The molecular formula of C_3H_6O having two functional isomers of A and B, A answer with tollens reagent . A,B react with Cl_2 produce C and D. A under goes condensation reactions produce compound E. Find A,B,C,D and E Explain the reaction.
- d. Calculate the P^H of 0.1M acedic acid dissociation constant of acedic acid is 1.8×10^{-5}

