GUJARAT BOARD CLASS 12 CHEMISTRY SAMPLE PAPER-SET 4

Time : 3 Hours] *[Maximum Marks : 100*

Instructions :

1. *There are total **60** questions and **all** are **compulsory**.*
2. *Write new section on new page and maintain the order of the questions.*
3. *Write equations, st.formulae and diagram with proper labellings.*
4. *Write your answer as instructed in the given question with necessary points.*
5. *Use log-table or simple calculator for calculations.*

Section - A

Question Nos. **1** to **16** are multiple choice type. Each of **one** mark. Select the correct option of the following. **16**

1. What is the type of hybridization of each carbon in graphite ?

a) dsp^2 b) sp

c) sp^2 d) sp^3

2. Which does not change with change in temperature ?

a) Molarity b) Normality

c) Formality d) Molality

3. If $\Delta G = 0$, then equilibrium constant is .....

a) < 1 b) > 1

c) 1 d) 0

4. What is the correct value for rate of reaction $R \rightarrow P$

a) $\frac{-\Delta[R]}{t}=\frac{\Delta[P]}{\Delta t}$

b) $\frac{-\Delta[R]}{\Delta t}=\frac{\Delta[P]}{\Delta t}$

c) $\frac{-[R]}{t}=\frac{\Delta[P]}{\Delta t}$

d) $\frac{-\Delta[R]}{\Delta t}=\frac{\Delta t}{\Delta[P]}$

5. Which silver halide is used in photography ?

a) AgI

b) AgF

c) $AgBr$

d) $AgCl$

6. Which complex is the most stable ?

a) $\left[Ni(H_2O)_4\right]^{2+}$

b) $[NiCl_4]^{2-}$

c) $\left[Ni(CN)_4\right]^{2-}$

d) $\left[Ni(NH_3)_4\right]^{2+}$

7. Whose penetration power is very low ?

a) γ - rays

b) α - particles

c) β - particles

d) not given

8. Phenol can be neutralised by which of the following base ?

a) $NaHCO_3$

b) Na_2CO_3

c) $NaOH$

d) None of these

9. Which of the following alcohol is trihydric alcohol ?

a) ethylene glycol

b) benzyl alcohol

c) glycerol

d) tertiary butyl alcohol

10. Which compound is obtained by oxidation of aldehyde ?

a) acetone

b) alcohol

c) carboxylic acid

d) ether

11. Which is the general formula for aldehyde and ketone ?

a) $C_nH_{2n}O$

b) $C_nH_{2n-1}O$

c) $C_nH_{2n+2}O$

d) $C_nH_{2n-2}O$

12. Which compound does not react with Hinsberg's reagent ?

a) $(CH_3)_2NH$ b) $CH_3 \cdot NH_2$

c) $(CH_3)_3 \cdot N$ d) none of these

13. Which is the IUPAC name of CH_3CN ?

a) Acetonitrile b) Methyl cyanide

c) Ethane nitrile d) Ethyl nitrile

14. What is correct for teflon from the following ?

a) Polystyrene b) PVC

c) PTFE d) PAN

15. What is Invert sugar ?

a) Combination of sucrose

b) Mixture of glucose and galactose

c) Type of sucrose

d) Equal mixture of D-glucose and D-fructose

16. Which vitamin is used in cream ?

a) C and E b) A and E

c) A and C d) B and D

Section - B

Question Nos. **17** to **32** are very short answer type. Each of **one** mark. Answer the following in short. **16**

17. What is photoelectric effect ?

18. What defect is found in the *Cu-Au* alloy ?

19. Which substance has appearance and conductivity similar to that of copper ?

20. How many grams of $NaOH$ will be required to prepare 500 gram solution containing 10% w/w $NaOH$? Molecular weight of $NaOH$ is 40 gram $mole^{-1}$.

21. Mention the third law of thermodynamics.

22. $E^0Ni^{2+}/Ni = -0.25$ volt and $E^0Cu^{2+}/Cu = 0.34$ volt, can be aqueous solution of $CuSO_4$ be stored in a nikel vessel, Why ?

23. Mention the instrument used to determine electric charge of a colloid.

24. Write the structural formula : Para per iodic acid.

OR

Give the two uses of Se.

25. In which oxidation state 'Mn' acts as an strong oxidizing agent ? Give an example.

26. Give IUPAC name of 'Hydroquinone'.

27. Complete the reaction : $2H \cdot CHO \xrightarrow[+H_2O]{[conc.\ NaOH]}$

OR

Give name and one use of an aqueous solution of formaldehyde.

28. Which compound is obtained from reaction between benzoic acid and $LiAlH_4$? Give equation and IUPAC name of the product.

29. Give the definition of plasticizer with an example.

30. Mention the name and structure of monomar of Nylon-6.

31. Mention any two diseases with deficiency of vitamin 'H'.

32. What is called leuco salt ?

Section - C

Question Nos. **33** to **48** are short answer type questions. Each of **two** marks. **32**

33. Mention the four conditions for acceptable solution of ψ.

OR

What is nodal plane ? Mention the number of nodes in 1S and 3S orbitals.

34. Explain electronic deficiencies in solids.

35. For how much time the electric current of 1.0 ampere be passed to obtain all the silver metal from the solution containing Ag^+ during electrolysis of 100 ml 0.02 M $AgNO_3$. (1F = 96500 Coulombs)

36. Give the scientific reason : Rate of reaction increases in the presence of catalyst.

37. The rate constant of a first order reaction is 60 S^{-1}. What will be the time taken for concentration to be 1/6 of the initial concentration ?

38. State Hardy-Schulze rules.

39. What is emulsion ? Explain its types giving examples.

40. Give the various forms of phosphorous and write the properties of each one.

OR

How silica gel is prepared ? Give its two uses.

41. In 1st transition series the oxidation state of elements on both ends is lower. Explain.

42. Give one use of the following alloys : i) Nitinol ii) German-silver.

43. Give the scientific reason : $\left[Fe(CN)_6\right]^{3-}$ possesses more paramagnetic moment than $\left[Fe(H_2O)_6\right]^{3+}$

OR

Cu_2Cl_2 is colourless but $CuCl_2$ is colourful.

44. Give IUPAC name of complex compounds :

i) $NH_4\left[Cr(NH_3)_2(OX)_2\right]$ ii) $\left[Co(H_2O)_5(NO_3)\right]Cl_2$

45. The mass of ^2_1H and ^4_2He isotopes are 2.0141 and 4.0026 *amu*. If the velocity of light is 2.998×10^8 meter sec^{-1} then how much energy will produced when two mole of ^2_1H are fused to form ^4_2He ?

46. Define : i) Racemic mixture ii) Resolution

47. Give the organic conversion in two steps with conditions salicylaldehyde from chlorobenzene.

OR

Ethyl chloride from diethyl ether.

48. Explain industrial production and the two uses of the polystyrene.

Section - D

Question Nos. **49** to **60** are long answer type questions. Each of **three** marks. **36**
Answer the following to the points.

49. Give molecular orbitals diagram of O_2 molecule and calculate bond order and magnetic property.

50. State and explain Henry's law and give its two limitations (graph is necessary).

OR

Obtain an equation for determining molal freezing constant (*kf*).

51. Calcualte the equilibrium constant of the following reaction at 25^0C. (R = 1.987 cal)

$$2SO_{3(g)} \rightleftharpoons 2SO_{2(g)} + O_{2(g)}$$

The value of ΔG^0_f for $SO_{2(g)}$ and $SO_{3(g)}$ at 25^0C are – 71.79 and – 88.52 kcal mol^{-1} respectively.

52. Write only equation of reaction taking place at cathode in each of Dry cell, Fuel cell and Lead storage cell.

53. Discuss the industrial production of H_2SO_4 by contact process. (figure not essential)

OR

Describe the method to obtain highly pure silicon from silica.

54. Explain the classification of any three types of ligands with an example.

OR

Write a note on importance of complex compounds obtained from nature.

55. Calculate the rate of α - particles per second obtained from 1 gram of radium. The atomic weight of radium is 226 and its half-life period is 1620 years.

56. Give Fisher projection formula of Bromochlorofluoro methane and glyceraldehyde.

OR

Explain the importance of stereochemistry. (any six points)

57. Write a reaction of hydrolysis, reduction and dehydration with acetamide.

58. Write the equation of diazotization of aniline. Give equations of two reactions of azo-coupling.

59. How are lipids classified ? Give an example of each class.

60. What is pheromones ? Explain its importance with an example.

OR

Explain : Acidic dyes, Basic dyes and Direct dyes with an example.