

Padasalai's Centum Coaching Team – Special Question Paper

Class : XII

Marks: 150

Sub : Chemistry

Time : 3.00 hrs

I. Answer the all questions.**Choose and write the correct answer:****30x1=30**

1. De- Broglie equation is

- a) $\lambda = \frac{h}{m v}$ b) $\lambda = h m v$ c) $\lambda = \frac{h}{m v}$ d) $\lambda = \frac{h}{m v}$

2. The hybridization in IF_7 molecule is

- a) Sp^3 b) $\text{Sp}^3 \text{d}^2$ c) $\text{Sp}^3 \text{d}$ d) $\text{Sp}^3 \text{d}^3$

3. Effective nuclear charge (Z^*) can be calculated by using the formula

- a) $Z^* = Z - S$ b) $Z^* = Z + S$ c) $Z^* = S - Z$ d) $Z = Z^* - S$

4. The compound used as smoke screen

- a) PCl_3 b) PCl_5 c) PH_3 d) H_3PO_3

5. Which of the ions will give colorless aqueous solution?

- a) Ni^{2+} b) Fe^{2+} c) Cu^{2+} d) Cu^+

6. The electronic configuration of chromium is

- a) $3\text{d}^6 4\text{s}^0$ b) $3\text{d}^5 4\text{s}^1$ c) $3\text{d}^4 4\text{s}^2$ d) $3\text{d}^3 4\text{s}^2 4\text{p}^1$

7. The most common oxidation state of actinide is

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

8. Which of the following lanthanides have no partly filled 4f sub – shell but have electrons in 5d sub – shell?

- a) Ce b) Lu c) Pm d) Nd

9. Chlorophyll is a _____ complex. a) magnesium – Porphyrin

- b) Iron – Porphyrin c) Copper – Porphyrin d) Nickel –Porphyrin

10. In the nuclear reaction ${}_{90}^{\text{Th}232}$ ${}_{82}^{\text{pb}208}$ the number of α and β particles emitted are

- a) $1\alpha, 4\beta$ b) $2\alpha, 2\beta$ c) $6\alpha, 4\beta$ d) $8\alpha, 4\beta$

11. The smallest repeating unit in space lattice which when repeated over and again results in the crystal of the given substance is called a) Space lattice b) Crystal lattice c) Unit cell d) Isomorphism 12. In an adiabatic process, which of the following is true?

- a) $q = w$ b) $q = 0$ c) $\Delta E = q$ d) $P\Delta V = 0$

13. Entropy (S) and the change in entropy of the process (ΔS)

- a) are path functions b) are state functions c) are constants d) have no values

14. If the equilibrium constants of the following reactions are 2A

B is K_1 and B $2A$ is K_2 , then

- a) $K_1 = 2K_2$ b) $K_1 = -$ c) $K_2 = (K_1)^2$ d) $K_1 = -$

15. Presence of moisture in contact process.

- a) Activates the catalyst b) deactivates the catalyst
c) increases the product d) makes the catalyst porous

16. The unit of Zero order rate constant is

- a) litre mol⁻¹ sec⁻¹ b) mol litre⁻¹ sec⁻¹ c) sec⁻¹ d) litre² sec⁻¹

17. The emulsifying agent used in O/W emulsion is. a) Protein

- b) long chain alcohol c) Lampblack d) heavy metal salts of fatty acids

18. Decomposition of Hydrogen peroxide is retarded in the presence of .

- a) Alcohol b) Glycerine c) manganese dioxide d) Molybdenum

19. Colloids are purified by. a) Precipitation b) Coagulation

- c) Dialysis d) Filtration

20. The pH of a solution containing 0.1N Na OH solution is

- a) 1 b) 10⁻¹ c) 13 d) 10⁻¹³

21. Ethyl alcohol cannot be used as a solvent for CH₃Mgl

- because a) CH₃Mgl reacts with alcohol giving methane

b) The reaction between them is explosive in nature

c) CH₃Mgl is converted to C₂H₅Mgl

d) Alcohol is immiscible with CH₃Mgl

22. oxygen atom of ether is. a) Very active

b) Replaceab

c) Oxidising

d) Comparatively inert

23. Ether is formed when alkyl halide is treated with Sodium alkoxide.

This method is known as. a) Hoffmann reaction

b) Williamson synthesis c) Wurtz synthesis d) Kolbe's reaction

24. Tollen's Reagent is.

a) Ammoniacal cuprous chloride b) Ammoniacal cuprous oxide

c) Ammoniacal silver nitrate d) Ammoniacal silver chloride

25. The order of reactivity of carboxylic acid derivatives is

a) Acid chloride > Ester > Amide > Acid anhydride

b) Acid chloride > Acid anhydride > Ester > Amide

c) Acid chloride > Amide > Acid anhydride > Ester

d) Acid anhydride > Ester > Amide > Acid chloride

26. The isomerism exhibited by CH₃-CH₂-N and CH₃CH₂-O-N=O

is. a) Position b) Chain c) Functional d) Tautomerism

27. Methyl isocyanide on reduction using Li AlH₄ gives a) Methyl

amine b) Ethyl amine

c) Di methyl amine

d) Tri methyl amine

28. Which of the following is a secondary amine?

a) Aniline b) Diphenyl amine

c) Sec. butyl amine

d) tert. Butyl amine

29. ____ act as protective agent on the surface of animals and plants.

a) Carbohydrates b) Vitamins

c) Nucleic acids d) Waxes

30. Important constituent of cell wall is

- a) Lipid b) Cellulose c) protein d) Vitamin

Part – II

II. (i) Answer any fifteen questions:- **15x3=45**

(ii) Each answer should be in one or two sentences

31. Why is He₂ not formed?
32. Compare the ionization energies of Carbon and Boron?
33. Prove that phosphorus acid is a powerful reducing agent?
34. Illustrate the oxidizing power of fluorine?
35. Why do transition elements form alloys?
36. Explain chromyl chloride test with equation?
37. Explain the principle behind the “Hydrogen bomb”
38. What is meant by superconducting transition temperature?
39. ΔH and ΔS values of a reaction at 300 K are - 10K.cal.mole⁻¹ and 20 cal.deg⁻¹ mole⁻¹ respectively. Calculate ΔG value.
40. Give one gaseous equilibrium reaction as an example for the following. (i) $\Delta n(g) = 0$ (ii) $\Delta n(g) = -ve$ (iii) $\Delta n(g) = +ve$
41. What is Pseudo first order reaction? Give an example.
42. Write a note on consecutive reactions.
43. How is Delta farmed?
44. What is meant by common ion effect?
45. Mesotartaric acid is an optically inactive compound with asymmetric carbon atom. Justify your answer.
46. Give account of Dow process?
47. Starting from phenol, how would you obtain picric acid.
48. What is formalin ? Write its use.
49. Compare the strength of mono, di and trichloro acetic acid.
50. $C_6H_5CH_2NH_2 \longrightarrow A \longrightarrow B$ C. Identify A, B and C.
51. How is nylon – 66 prepared?

Part – III

Note: (i) Answer any seven question choosing at least two questions from each section. **7x5=35**

Section – A

52. Discuss the formation of N₂ molecule by molecular orbital theory?
53. Explain how potassium dichromate is extracted from chromites ore.
54. Compare the points of similarities and differences between lanthanides and actinides.
55. Explain coordination and ionization isomerism with suitable examples.

Section – B

56. Write the characteristics of free energy G.

57. Apply Lechatelier's principle to contact process of manufacture of SO_3
58. State the differences between simple and complex reactions.
59. The e.m.f. of the half cell $\text{Cu}^{2+}(\text{aq})|\text{Cu}(\text{s})$ containing 0.01M Cu^{2+} solution is $+0.301\text{v}$. Calculate the standard e.m.f. of the cell.

Section – C

60. Distinguish between anisole and diethyl ether.
61. Explain the mechanism of Cannizzaro reaction
62. Write short notes on the following:
(i) HVZ – reaction (ii) Trans – esterification (iii) Kolbe's electrolytic reaction
63. What are Chromophores and auxochromes? Give two examples for each.

Part – IV

Note: (i) Question No.70 is compulsory and answer any three from the remaining questions. 4x10=40

64. (a) Explain the various factors that affect electron affinity.
(b) Describe in detail how noble gases are isolated from air by Ramsay – Rayleigh's method.
65. (a) $[\text{Ni}(\text{CN})_4]^{2-}$ is paramagnetic. Explain
(b) Distinguish chemical reactions from nuclear reactions.
66. (a) Write the properties of ionic crystals.
(b) Write the general characteristics of catalytic reactions.
67. (a) Give Henderson equation
(b) Derive Nernst equation.
68. (a) Describe the conformation of aspirin, methyl salicylate and 2,4,6- tribromophenol from salicylic acid.
69. (a) Write notes on the following:
(i) Mustard oil reaction (ii) Diazotization reaction
(iii) Gomberg reaction
(b) Explain the functions of lipids in Bioystems.
70. (a) An organic compound $\text{C}_2\text{H}_2\text{O}(\text{A})$ reacts with Al_2O_3 at 620 K and gives (B) of molecular formula $\text{C}_2\text{H}_6\text{O}_2$. C reacts with PI_3 gives back (B). Identify (A) ,(B) and (C) and explain the reactions.
(b) A bluish white metal when treated with dilute nitric acid gives (A) along with Zinc nitrate and water. With very dilute nitric acid it gives (B) along with Zinc nitrate and water . The metal when heated with air gives (C). What are (A) ,(B) and (C) ? Explain the reactions. (OR)

- (c) Compound (A) having the molecular formula C_2H_4O reduces Tollen's reagent. (A) on treatment with HCN followed by hydrolysis gives the compound (B) with molecular formula $C_2H_6O_3$ compound (B) on oxidation by Fenton's reagent gives the compound (C) with the molecular formula $C_3H_4O_3$. Find (A), (B) and (C), Explain the reactions.
- (d) Ionic conductance's at infinite dilution of Al^{3+} and SO_4^{2-} are $189 \text{ ohm}^{-1} \text{ cm}^2 \text{ gm}^{-1}$ equal and $160 \text{ ohm}^{-1} \text{ cm}^2 \text{ gmequir}^{-1}$ Calculate

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மாணவர்கள் செய்ய வேண்டியது என்ன?

1. [Click Here & Enter Your Details \(Students Only\)](#)
2. நமது பாடசாலை வலைதளத்தில் வழங்கப்படும் சிறப்பு வினாத்தாளை பிரிண்ட் எடுத்து விடுமுறை நாட்களில் முழுமையான, முறையான தேர்வு எழுதி வினாத்தாள் தயாரித்து வழங்கிய ஆசிரியருக்கு அனுப்பி வைக்க வேண்டும்.
3. A4 Size (Or) Legal Size உள்ள துணிக்கவர்கள் இரண்டு வாங்கிக்கொள்ள வேண்டும். ஒரு தாளில் வினாத்தாள் தயாரித்த ஆசிரியர் முகவரியை "பெறுநர்" பகுதியில் குறிப்பிட்டு அதில் தங்கள் விடைத்தாளை வைக்க வேண்டும்.
4. மற்றோரு கவரில் மாணவர்கள் தங்கள் சுயமுகவரியை "பெறுநர்" எனும் இடத்தில் எழுதி அதற்கு தேவையான அளவில் ஸ்டாம்ப்களையும் ஒட்டிய பிறகு, அக்கவரையும் விடைத்தாள் எழுதி அனுப்பும் கவருக்குள்ளேயே வைத்து அனுப்ப வேண்டும்.
5. ஒன்றுக்கும் மேற்பட்ட மாணவர்கள் இணைந்து விடைத்தாளை அனுப்பினால் மொத்தமாக ஒரே கவரில் அனுப்பலாம்.
6. ஆசிரியர்கள் தங்கள் விடைத்தாளை திருத்திய பிறகு தங்கள் சுயவிவரம் கவரில் (Return Cover) வைத்து தங்களுக்கு விரைவில் திருப்பி அனுப்புவார்.
7. தங்கள் விடைத்தாளை உரிய ஆசிரியருக்கு அனுப்பி வைத்த தேதியிலிருந்து 3 வாரங்களுக்குள் தங்களுக்கு மூல கிடைக்காவிடில் இங்கு தரப்பட்டுள்ள "புகார் பதிவு படிவத்தில்" தங்கள் விவரத்தை பதிவு செய்யவும். [Click Here for Complaint Box!](#)
8. Slow Learners மூது மட்டும் கவனம் செலுத்தாமல் மூத்திறன் மிகுந்த மாணவர்களுக்கும் உதவும் நோக்கில், மாணவர்களின் நலன் கருதி, இச்சேவையில் தங்களை இணைத்துக்கொண்டுள்ள பாடசாலை ஆசிரியர் குழுவினை, மாணவர்கள் மிகுந்த பணிவுடன் தொடர்பு கொண்டு திருத்தப்பட்ட விடைத்தாள் குறித்த தங்கள் சந்தேகங்களையும், ஆலோசனைகளையும் அலைபேசி மூலமாக பெறலாம்.

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