

Tsi12C

Tenkasi District

Common Half Yearly Examination - December 2024



20-12-24

Standard 12

Time Allowed: 3.00 Hours

CHEMISTRY

Maximum Marks: 70

PART - A

I. Choose the best answer:

15×1=15

- Which of the following plot gives Ellingham diagram?
a) $\Delta SVST$ b) $\Delta G^{\circ}VST$ c) $\Delta G^{\circ}VS1/T$ d) $\Delta G^{\circ}VST^2$
- The compound that is used in nuclear reactors as protective shields and control rods is
a) Metal Borides b) Metal Oxides c) Metal Carbonates d) Metal Carbide
- Among the following the correct order of acidity is
a) $HClO_2 < HClO < HClO_3 < HClO_4$ b) $HClO_4 < HClO_2 < HClO < HClO_3$
c) $HClO_3 < HClO_4 < HClO_2 < HClO$ d) $HClO < HClO_2 < HClO_3 < HClO_4$
- Permanganate ion changes to _____ in acidic medium.
a) MnO_4^{2-} b) Mn^{2+} c) Mn^{3+} d) MnO_2
- A complex in which the oxidation number of the metal is zero is
a) $K_4[Fe(CN)_6]$ b) $[Fe(Cr)_3(NH_3)_3]$ c) $[Fe(CO)_5]$ d) Both (b) and (c)
- Potassium has a bcc structure with nearest neighbour distance 4.524\AA . Its atomic weight is 39. Its density will be
a) 915 Kg m^{-3} b) 2142 Kg m^{-3} c) 452 Kg m^{-3} d) 390 Kg m^{-3}
- Time required for 100% completion of a zero order reaction is
a) $\frac{a}{2K}$ b) aK c) $\frac{2K}{a}$ d) $\frac{a}{K}$
- pH of a saturated solution of $Ca(OH)_2$ is 9. The solubility product of K_{sp} $Ca(OH)_2$.
a) 0.5×10^{-15} b) 0.25×10^{-10} c) 0.125×10^{-15} d) 0.5×10^{-10}
- How many Faraday of electricity are required for the following reaction to occur $MnO_4^- \rightarrow Mn^{2+}$?
a) 5F b) 3F c) 1F d) 7F
- Hair cream is
a) gel b) emulsion c) solid sol d) sol
- The correct IUPAC name of the following compound.

$$\begin{array}{ccccccc} CH_3 & - & CH & - & CH & - & CH & - & CH_2 & - & OH \\ & & | & & | & & | & & & & \\ & & Cl & & CH_3 & & CH_3 & & & & \end{array}$$

a) 4-chloro-2, 3-dimethyl pentan-1-ol b) 2, 3 dimethyl-4-chloro pentan-1-ol
c) 2, 3, 4-trimethyl-4-chloro butan-1-ol d) 4 chloro-2, 3, 4-trimethyl pentan-1-ol
- In the following reaction $CH \equiv CH \xrightarrow[HgSO_4]{H_2SO_4} X$, product 'X' will not give
a) Tollen's test b) Victor Mayer's test
c) Iodoform test d) Fehling's solution test
- Which one of the following will not undergo hoffman's reaction?
a) $CH_3CONHCH_3$ b) $CH_3CH_2CONH_2$ c) CH_3CONH_2 d) $C_6H_5CONH_2$
- The number of sp^2 and sp^3 hybridised carbon in fructose are
a) 1 and 4 b) 4 and 2 c) 5 and 1 d) 1 and 5
- As per BIS standard Grade 1 soap have _____ minimum TFM value.
a) 70% b) 60% c) 67% d) 76%

PART - B

Answer any SIX questions: [Q.No. 23 is compulsory]

6×2=12

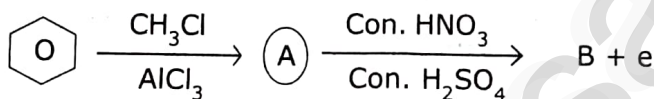
- 16) What are the various steps involved in the extraction of pure metals from their ores?
- 17) Draw and explain the structure of Ammonia.
- 18) Explain Hume - Rothery rule.
- 19) What is linkage isomerism?
- 20) Explain Arrhenius Equation.
- 21) What is common ion effect? Explain.
- 22) What is Tyndal effect?
- 23) How will you convert chloro benzene to phenol?
- 24) How will you prepare Nylon 66?

PART - C

Answer any SIX questions: [Q.No. 31 is compulsory]

6×3=18

- 25) Write the uses of Silicon.
- 26) $[\text{Ti}(\text{H}_2\text{O})_6]^{3+}$ is coloured where as $[\text{Se}(\text{H}_2\text{O})_6]^{3+}$ is colourless. Why?
- 27) Give the difference between order and molecularity.
- 28) What are catalytic poisons? Give two examples.
- 29) Calculate the packing efficiency of simple cubic system.
- 30) Explain intermediate compound formation theory.
- 31) Identify A, B and C.



- 32) How will you prepare Terlene?
- 33) What are hormones? Give examples.

PART - D

Answer all the questions:

5×5=25

- 34) a) i) Describe the method for refining nickel.
- ii) What is autoreduction?

(OR)

- b) i) Complete the following:



- ii) Write note on Holme's signal.

- 35) a) Compare Lanthanides and Actinides.

(OR)

- b) Explain Frenkel and Schottky defect.

- 36) a) What are the postulates of V.B. Theory?

(OR)

- b) Derive Nernst Equation.

- 37) a) i) Write the difference between DNA and RNA.
- ii) What is Zwitter Ion? Explain.

(OR)

- b) Explain the mechanism of Cannizaro's Reaction.

- 38) a) Discuss the structure of glucose.

(OR)

- b) i) How do antiseptic differ from disinfectants?
- ii) What are food preservatives?

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