

Ts11CHE

Tenkasi District Common Examinations
Common Second Revision Examination - February 2023



27-02-2023

Standard 11

CHEMISTRY

Time: 3.00 Hours

Part - A

Marks: 70

15x1=15

I. Choose the correct answer:

- An Element X has the following isotopic composition $^{200}\text{X} = 90\%$, $^{199}\text{X} = 8\%$ and $^{202}\text{X} = 2\%$. The weighted average atomic mass of the element X is closest to
a) 201 u b) 202 u c) 199 u d) 200 u
- Assertion:** The spectrum of He^+ is expected to be similar to that of hydrogen
Reason: He^+ is also one electron system.
a) If both assertion and reason are true and reason is the correct explanation of assertion
b) If both assertion and reason are true but reason is not the correct explanation of assertion
c) If assertion is true but reason is false
d) If both assertion and reason are false
- In a given shell the order of screening effect is
a) $s > p > d > f$ b) $s > p > f > d$ c) $f > d > p > s$ d) $f > p > s > d$
- Tritium nucleus contains
a) $1p + 0n$ b) $2p + 1n$ c) $1p + 2n$ d) none of these
- The product obtained as a result of reaction of nitrogen with CaC_2 is
a) $\text{Ca}(\text{CN})_3$ b) CaN_2 c) $\text{Ca}(\text{CN})_2$ d) Ca_3N_2
- A reaction, $\text{A} + \text{B} \rightarrow \text{C} + \text{D} + \text{q}$ is found to have a positive entropy change. The reaction will be
a) possible at high temperature b) possible only at low temperature
c) not possible at any temperature d) possible at any temperature
- The units of Vander Waals constants 'b' and 'a' respectively
a) mol L^{-1} and $\text{L atm}^2 \text{mol}^{-1}$ b) mol L and L atm mol^2
c) $\text{mol}^{-1} \text{L}$ and $\text{L}^2 \text{atm mol}^{-2}$ d) none of these
- An equilibrium constant of 3.2×10^{-6} for a reaction means, the equilibrium is
a) largely towards forward direction b) largely towards reverse direction
c) never established d) none of these
- Which one of the following is incorrect for ideal solution?
a) $\Delta H_{\text{mix}} = 0$ b) $\Delta U_{\text{mix}} = 0$
c) $\Delta P = P_{\text{observed}} - P_{\text{Calculated by Raoult's law}} = 0$ d) $\Delta G_{\text{mix}} = 0$
- Which of the following is electron deficient?
a) PH_3 b) $(\text{CH}_3)_2$ c) BH_3 d) NH_3
- Ortho and para-nitro phenol can be separated by
a) azeotropic distillation b) destructive distillation
c) Steam distillation d) cannot be separated
- Decreasing order of nucleophilicity is
a) $\text{OH}_- > \text{NH}_2^- > \text{OCH}_3^- > \text{RNH}_2$ b) $\text{NH}_2^- > \text{OH}_- > \text{OCH}_3^- > \text{RNH}_2$
c) $\text{NH}_2^- > \text{CH}_3\text{O}_- > \text{OH}_- > \text{RNH}_2$ d) $\text{CH}_3\text{O}_- > \text{NH}_2^- > \text{OH}_- > \text{RNH}_2$
- Which alkene on ozonolysis gives $\text{CH}_3\text{CH}_2\text{CHO}$ and CH_3COCH_3 ?
a) $\text{CH}_2 = \text{CH} - \text{C}(\text{CH}_3)_2$ b) $\text{CH}_3\text{CH}_2\text{CH} = \text{CH} - \text{CH}_2\text{CH}_3$
c) $\text{CH}_3\text{CH}_2\text{CH} = \text{CH} - \text{CH}_3$ d) $(\text{CH}_3)_2\text{C} = \text{CH} - \text{CH}_3$
- $\text{S}_{\text{N}}1$ reaction of alkyl halides lead to
a) retention of configuration b) Racemisation
c) Inversion of configuration d) None of these
- Which of the following is the coldest region?
a) Troposphere b) Mesosphere
c) Stratosphere d) Thermosphere

part - B

6x2=12

Answer any six questions. Q.No. 24 is compulsory:

- What are isotopes? Write the names of isotopes of hydrogen.
- Electron Affinity of fluorine is less than that of Chlorine. Why?
- Why NaOH is much more water soluble than NaCl?

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- 19) What is Exchange energy. 2
- 20) How will you detect the presence of Sulphure in an organic compound?
- 21) State Henry's law.
- 22) What is green house effect?
- 23) Write Huckel's rule?
- 24) The equilibrium constant of a reaction is 10. What will be the sign of ΔG ? Will this reaction be spontaneous?

Part - C

6x3=18

Answer any six questions. Q.No. 33 is compulsory:

- 25) Explain the difference between oxidation and reduction?
- 26) Explain the meaning of the symbol $4f^2$. Write all the four quantum numbers for these electrons.
- 27) How is plaster of paris prepared? Write its two uses.
- 28) State first law of thermodynamics.
- 29) How will you distinguish propane and propene
- 30) Write Hundsdicker Reaction.
- 31) Derive the relation between K_p and K_c .
- 32) Explain SN_2 mechanism
- 33) 0.456 g of a metal gives 0.606 g of its Chloride. Calculate the equivalent mass of the metal.

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Part - D

5x5=25

Answer all the questions:

- 34) a) i) What is limiting reagent? (2)
ii) A compound on analysis gave the following percentage composition C = 54.55%, H = 9.909, O=36.36. Molecular mass of the compound is 88. Determine the empirical formula and molecular formula.

(OR)

- b) i) Explain Bohr atom model (3)
ii) State Pauli's Exclusion principle. (2)
- 35) a) i) Explain Solvey process? (3)
ii) Write any two uses of Stroncium (2)
- (OR)**
- b) Derive the values of Critical Constants in terms of Vander Waal's constants(5).
- 36) a) State the various statements of second law of thermodynamics. (5)
- (OR)**
- b) i) Explain Vant hoff Factor "I"? (2)
ii) State Lechatlier principle (3)
- 37) a) Draw the M.O diagram for nitrogen molecule. Calculate its bond order and show that N_2 is diamagnetic (5)

(OR)

- b) i) Derive the Expression K_p and K_c for the reaction $H_2 + I_2 \rightleftharpoons 2HI$ (3)
ii) Write a balanced chemical equation for a equilibrium reaction for

which the equilibrium constant is given by expression $K_c = \frac{[NH_3]^4 [O_2]^5}{[NO]^4 [H_2O]^6}$

- 38) a) i) What is C is trans - isomerism? (2)
ii) Describe the classification of organic compounds based on their structure.

(OR)

- b) i) Write any three effects of Acid Rain (3)
ii) Explain the preparation of the DDT.