

KANDI RAJ COLLEGE

Department of Chemistry
Internal Assessment-2021
B.Sc (Hons) Sem-I
Paper-I (Inorganic)

Group-A (Marks-10)

5x2=10

1. Answer any five:
- What do you mean by shielding effect?
 - What are inner transition elements? Give example.
 - Shows that with increasing the principal quantum number the velocity of an electron decreases.
 - Write the Rydberg equation for the energy of an electron, identified the term involve in the equation.
 - Write the two important properties of s-block elements?
 - Calculate the ratio of kinetic energy and total energy of an electron.
 - Write the two postulate of Bohr's theory.
 - Write the Schrödinger's wave equation for H-atom in polar form. Indicates the term involves in the equation.

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U.G . 1st Semester Internal Examination-2021

CHEMISTRY

Paper: CHEMHT-2

Full marks: 10

Time: 30 min.

1) Answer any five questions from the following: 2x5=10

- i) What is hyperconjugation? Explain with Example.
- ii) State and explain Huckel's Rule for aromaticity.
- iii) Compare the C2-C3 bond length of propane and propene.
- iv) Draw Erythro-3-bromo-2-butanol in Newman and Sawhorse projection formula.
- v) What are Singlet and Triplet Carbenes?
- vi) Compare the relative stabilities of primary, secondary and tertiary carbanions.
- vii) What do you mean by specific rotation? What is Molar rotation?
- viii) Draw D and L-Glyceraldehyde in Fischer representation.
- ix) Comment on the relative stabilities of the following carbocations:



- x) How would you separate a racemic mixture of RCOOH ?

Kandi Raj College
B.Sc. 1st Semester Hons. Internal Assessment examination
Subject: Physical Chemistry [CHEMHT-1]

Time:

F.M. 10

Answer any ten. Choose the correct option for each of the following questions. Write only the question number and your chosen answer in your answer scripts. 1x10=10

1. Anything which depends upon initial and final states of a system is
(A) Environment (B) Surrounding (C) State function (D) Enthalpy

2. During the adiabatic expansion of 2 moles of a gas, the internal energy of the gas is found to decrease by 2 Joules. The work done during the process by the gas will be equal to
(A) 1 J (B) -1 J (C) 2 J (D) -2 J

3. Under which of the following conditions is the law $PV=nRT$ obeyed most closely by a real gas
(A) High pressure and high temperature
(A) Low pressure and low temperature
(A) Low pressure and high temperature
(A) High pressure and low temperature

4. Which of the following statements about kinetic theory of gases is wrong?
(A) The molecules of a gas are in continuous random motion
(B) The molecules continuously undergo inelastic collisions
(C) The molecules do not interact with each other except during collisions
(D) The collisions among the molecules are of short duration

5. The vapour of a substance behaves as a gas
(A) Below the critical temperature
(B) Above the critical temperature
(C) At 100°C
(D) At 1000°C

6. A diatomic molecule has how many degrees of freedom
(A) 2
(B) 4
(C) 5
(D) 6

7. For a gas the r.m.s. speed at 800K is
(A) Four times the value at 200K
(B) Half the value at 200K
(C) Twice the value at 200K
(D) Same as the value at 200K

8. Which one is not a state function?
(A) Internal energy
(B) Enthalpy
(C) Gibbs free energy
(D) Work
9. Based on the 1st law of thermodynamics, which one of the following is correct?
(A) For an isothermal process, $q = +w$
(B) For an isochoric process, $\Delta U = -q$
(C) For an adiabatic process, $\Delta U = -w$
(D) For a cyclic process, $q = -w$
10. Enthalpy change can be
(A) calculated by Hess's Law
(B) measured by calorimeter
(C) both A and B
(D) none
11. An isolated system
(A) is a specified region where transfers of energy and mass take place.
(B) is a region of constant mass and only energy is allowed through the closed boundaries.
(C) is one in which mass within the system is not necessarily constant.
(D) cannot transfer either energy or mass to or from the surroundings.
12. In an open system, for maximum work, the process must be entirely
(A) Irreversible
(B) Reversible
(C) Adiabatic
(D) None of the above

Sub: Chemistry

Paper: I

Full Marks - 10.

CHEM-HCHE-T-1

নিম্নোক্ত বিকল্পে 5 টি সঠিক বা ভুল উত্তর দাও : 2x5=10

1. কার্বন ডাই-সালফাইডের 2 টি সজ্জা (সংকেত) লিখ।
2. ইলেকট্রন আনুসঙ্গিকতা নাম F এর জন্য বিবিস্তৃত কক্ষ ?
3. H₂O যুক্ত সঠিক বন্ধন/বন্ধ - চিহ্নিত কর।
4. CH₃ - যার সঠিক নাম - $\overset{\cdot}{\text{C}} = \text{O}$ - যার নাম - CO_2H এর সঠিক নাম লিখ।
5. কার্বন কার্বন গুলির R/S নামকরণ কর - $\begin{matrix} \text{H} & & \text{OH} \\ | & & | \\ \text{C} & - & \text{C} \\ | & & | \\ \text{H} & & \text{OH} \\ & & \text{OH} \end{matrix}$
6. বিসম্বন্ধিত নাম লিখ - $\text{CH}_3 - \text{C} \equiv \text{C} - \text{CH}_3 \xrightarrow[\text{in cell}]{\text{Br}_2} ?$
 $\xrightarrow[\text{in liq. NH}_3]{\text{Na}} ?$