VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY (VSSUT), ODISHA
Odd Mid Semester Examination for Academic Session 2023-24

COURSE NAME: B.Tech   SEMESTER: 1st

BRANCH NAME: All Circuit branches (CSE, IT, EE, EEE and ETC)
SUBJECT NAME: Chemistry

FULL MARKS: 30   TIME: **90 Minutes**

Answer **All** Questions.
The figures in the right-hand margin indicate Marks. *Symbols carry usual meaning.*

Q1.   Answer all Questions.   [2 × 3]

   a) Why ionization energy of Neon is more than that of Fluorine.
   b) Electron affinity values of N and P are very low. Explain
   c) Calculate the entropy change by expanding one mole of an ideal gas from a volume of $1dm^3$ to $10\ dm^3$

Q2.   [8]

Explain about ionic radius. Discuss the factors affecting ionic radius and variation of atomic and ionic radius in the periodic table.

OR

Explain about polarization and polarizability and the periodic trend of polarization and polarizability.

Q3.   [8]

Explain about entropy and feasibility. Derive the mathematical expression for entropy of a mixing. Calculate the entropy of mixing of one mole of Nitrogen and two moles of Oxygen, assume that no chemical reaction taking place and the mixture behaves ideally.

OR

✓ Explain about free energy. Derive the expression of Gibb-Helmholtz equation. The free energy change accompanying by a given process is -86.5 KJ/mole at 293K and-83.5 KJ/mole at 308K Calculate the change in entropy for this process at 303K.

Q4.   [8]

What is electron affinity? Discuss the factors affecting electron affinity and variation of electron affinity along the period.

OR

Derive the expression for the entropy change of an ideal gas. Calculate the entropy change when one mole of an ideal gas is allowed to expand at 270C from a volume of 2Liter to volume of 29 liter at constant pressure of one atm.