

**Khatra Adibasi Mahavidyalaya**  
**B. Sc. Hons. Examination 2020, Semester- II**  
**Internal Assessment**  
**Subject- Chemistry, Paper Code- T3 (Inorganic Chemistry)**

**F.M. – 10**

**Time – 30min**

**1. Answer any three of the following:**

**3 × 2 = 6**

- a. Write down the limitations of Bohr's theory.
- b. Write down all four quantum numbers for the last electron of N.
- c. Arrange N, N<sup>+</sup>, O and O<sup>+</sup> in increasing order of ionization energies.
- d. State Hund's rule of maximum spin multiplicity.

**2. Answer any one of the following:**

**1 × 4 = 4**

- a. Calculate screening constant ( $\sigma$ ) and effective nuclear charge ( $Z^*$  or  $Z_{\text{eff}}$ ) for a 3d electron in Cu<sup>+2</sup> and a 3s electron in Mn<sup>+2</sup>.
  - b. Calculate the standard potential (EMF) of the cell in which the following reaction occurs:  
$$\text{Cu} + 2\text{Ag}^+ = \text{Cu}^{+2} + 2\text{Ag}$$
  
Also calculate standard free energy change for this reaction. (Given,  $E^0_{\text{Cu}^{+2}/\text{Cu}} = +0.337\text{v}$  and  $E^0_{\text{Ag}^+/\text{Ag}} = +0.80\text{v}$ )
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Internal Assessment

Subject - chemistry, paper code - T4 (organic chemistry)

F.M - 10

1. Answer the following questions: (2 x 5 = 10)

(a) i) What is meant by primary kinetic isotope effect? Explain with an example how this effect can be used in investigation of reaction mechanism. (1+2)

ii) What is neighbouring group participation, with example. (2)

(b) i) Arrange the following compounds in order of reactivity towards  $S_N1$  and  $S_N2$  displacements:

i) 2-Bromo-2-methylbutane

ii) 1-Bromopentane

iii) 3-Bromopentane.

(3)

ii) What is pyrolytic elimination? Give an example. (1+1)