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Total No. of Pages : 02

Total No. of Questions : 09

B.Sc.(BT) (2014 to 2017) (Sem.-1)

**INORGANIC CHEMISTRY**

Subject Code : BSBT-103

M.Code : 47022

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

**SECTION-A**

1) Answer briefly :

- (a) Which element has higher atomic volume Na or K and Why?
- (b) Explain why electron affinities of Halogens are the highest?
- (c) Why do noble gases exist as monoatomic?
- (d) Discuss the geometry of SF<sub>6</sub> molecule on the basis of VSEPR theory.
- (e) Explain the difference in bond angles of NH<sub>3</sub> and NF<sub>3</sub>.
- (f) Define optical isomerism with a suitable example.
- (g) Discuss the differences between inter and intramolecular hydrogen bonding with examples.
- (h) Define paramagnetism and anti-ferromagnetism.
- (i) Discuss the important postulates of VBT.
- (j) What is the importance of Fajan's rules in bonding?

## SECTION-B

2. What do you understand by the terms resonance and resonance energy? What are the essential conditions for writing resonating structures?
3. Using VSEPR theory, explain the structures of SF<sub>4</sub>, ClF<sub>3</sub> and H<sub>2</sub>O in details.
4. With the help of MOT explain why bond length of CO<sup>+</sup> is larger than that of CO?
5. Discuss the basic postulates of Werner's co-ordination theory with suitable examples.
6. Discuss the limitations of VBT and postulates of MOT in covalent bonding.

## SECTION-C

7. (a) Define electronegativity and discuss Pauling's scale of electronegativity.  
(b) Define ionisation, hydrate and linkage isomerism in co-ordination compounds with suitable examples of each of them.
8. (a) Discuss sp<sup>3</sup> d<sup>3</sup> and sp<sup>2</sup> hybridizations in details with examples.  
(b) Discuss postulates of CFT in details. What are labile and inert complexes?
9. (a) Compare the stability of N<sub>2</sub> and O<sub>2</sub> molecules on the basis of MOT.  
(b) What are isoelectronic species? Give an example of the molecule isoelectronic with CO.

**NOTE : Disclosure of identity by writing mobile number or making passing request on any page of Answer sheet will lead to UMC against the Student.**