

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)

CLASS: IMSC
BRANCH: CHEMISTRY

SEMESTER: VI
SESSION: SP/2020

SUBJECT: IMC6007 INORGANIC CHEMISTRY-III

TIME: 1.5 HOURS

FULL MARKS: 25

INSTRUCTIONS:

1. The total marks of the questions are 30.
 2. Candidates may attempt for all 30 marks.
 3. In those cases where the marks obtained exceed 25 marks, the excess will be ignored.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. The missing data, if any, may be assumed suitably.
 6. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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- Q1 (a) Why lanthanides are used for wavelength calibration of instrument? [2]
(b) Eu^{2+} resembles Calcium. - Justify. [3]
- Q2 (a) Actinide compound are much more covalent than lanthanide compound. -Justify. [2]
(b) Discuss the extraction of uranium. [3]
- Q3 (a) Define pole strength and lines of force. [2]
(b) Discuss the magnetic susceptibility-temperature curves for different magnetic bodies. [3]
- Q4 (a) Calculate $\chi_M(\text{dia})$ for the compound 0-Phenylenebis(dimethylarsine) i.e. $[(\text{CH}_3)_2\text{As}-\text{C}_6\text{H}_4-\text{As}(\text{CH}_3)_2]$ [Atom correction C= -6.00; H= -2.93; As= -20.9; constitutive correction C(ring) = -0.24; all in 10^{-6}]. [2]
(b) Derive the expression of orbital magnetic moment. [3]
- Q5 (a) What are organometallic Compounds? Give examples of any two organometallic compounds used in catalysis? [2]
(b) What is Zeise Salt? [3]
- Q6 (a) Discuss the compliance and violation of 18 electron rule in: (i) $[\text{Cr}(\text{Co})_6]$ (ii) $\text{CH}_3\text{Mn}(\text{Co})_5$. [2]
(b) What are limitations of 18 electron rule? [3]

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