



A CharutarVidya Mandal's Institution
V.P. & R.P.T.P. SCIENCE COLLEGE
(AUTONOMOUS) (Grant-in-Aid)
Affiliated to Sardar Patel University
VALLABH VIDYANAGAR-388120



Bachelor of Science (Semester 3) External Examination - 2025
US03IDCHE01: INORGANIC CHEMISTRY-II

Date: 08/10/2025, Wednesday

Time: 02:00 PM to 03:30 PM

Total marks :25

Q-1 Give the correct answer of multiple choice question.

05

1. By using _____ method highest pure rare-earth elements can be isolated.

- (a) solvent extraction (b) ion exchange
(c) recrystallization (d) all of above

2) Electronic configuration of _____ element is $[Rn] 5f^7 6d^1 7s^2$

- (a) Californium (b) Uranium
(c) Curium (d) Neptunium

3) Actinides have _____ magnetic moment than the lanthanides.

- (a) more (b) less
(c) same (d) none of these

4) In the metal carbonyls, _____ bond form between metal and carbonyl.

- (a) $M \rightarrow CO$ (b) $M \rightarrow OC$
(c) $M \leftarrow CO$ (d) $M \leftarrow OC$

5) _____ is not liquid at ordinary temperature.

- (a) $[Ni(CO)_4]$ (b) $[Fe(CO)_5]$
(c) $[Ru(CO)_5]$ (d) $[Cr(CO)_6]$



Q-2. (a) Define actinides. Give the name, symbol, atomic number and electronic configuration of actinides.

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(b) Explain ion-exchange method for separation of Lanthanides.

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OR

Q-2 (a) Define lanthanides. Give the name, symbol, atomic number and electronic configuration of lanthanides.

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(b) Give the brief account on consequences of Lanthanide contraction.

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Q-3 (a) Discuss the structure and nature of M-CO bonding in metal carbonyl

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(b) Discuss the preparation, properties, structure and hybridization in $Co_2(CO)_8$.

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OR

Q-3 (a) Give the general methods of preparation and chemical properties of metal carbonyls.

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(b) Discuss the preparation, properties, structure and hybridization in $Ni(CO)_4$.

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