

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

CLASS: IMSC
BRANCH: MATHS & COMP./PHYSICS

SEMESTER: I/BL
SESSION : MO/2019

SUBJECT : CH111 CHEMISTRY - I

TIME: 2.00 HOURS

FULL MARKS: 25

INSTRUCTIONS:

1. The total marks of the questions are 25.
 2. Candidates may attempt for all 25 marks.
 3. Before attempting the question paper, be sure that you have got the correct question paper.
 4. The missing data, if any, may be assumed suitably.
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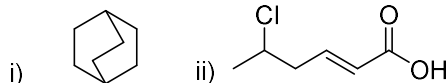
- Q1 (a) Write the postulates of the Bohr's atomic model. [2]
Q1 (b) Calculate the radius of He^{+1} ion for the following data: $\epsilon_0 = 8.85 \times 10^{-12} \text{ C}^2 \text{N}^{-1} \text{m}^{-2}$; $h = 6.625 \times 10^{-34} \text{ Js}$; $m = 9.11 \times 10^{-31} \text{ kg}$; $e = 1.6 \times 10^{-10} \text{ C}$. [3]

- Q2 (a) Explain de Broglie matter wave. [2]
Q2 (b) Write the radial wave function for 2s orbital and explain the presence of node. [3]

- Q3 (a) Write short note on nuclear spin isomerism. [2]
Q3 (b) Construct a Born Haber like Cycle for the formation of H^+ from gaseous hydride of formula H_nX . Write the equation for the heat of formation of H^+ . [3]

- Q4 (a) Explain why the thermal stability of the alkali metal carbonates decreases down the group? [2]
Q4 (b) Electrical conductivity and magnetic moment of alkali metals in liquid NH_3 decreases up to 0.5 M, then increases-Explain. [3]

- Q5 (a) Write down the IUPAC name for the following compounds: [2]



- Q5 (b) Explain why phenol is acidic, while aliphatic alcohols are not. [3]

::::: 17/10/2019 M :::::