B.Sc. (H) Chemistry, Semester- V (2023- 24)
Internal Assessment Test- 2
Paper- Quantum Chemistry and Spectroscopy

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*Attempt any **four** questions.* ***MM = 2.5 × 4 = 10***

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1. Show that $\psi = \sqrt{\frac{2}{a}} \sin \frac{n \pi x}{a}$ is not an eigen function of d/dx.
2. Why zero-point energy = 0 is not permitted for wave function for particle in a box?
3. What are the essential characteristics of well-behaved wave functions?
4. For $^{1}H^{79}Br$, the rotational constant B, is found to be 8.45 cm^{-1}. Calculate the internuclear distance for this molecule
5. Which of the following are eigen function of d/dx:
   Sin 3x, 6 cos 4x, 5 x^2, 3 e^{-5x}.