THE AMERICAN COLLEGE, MADURAI

(An Autonomous Institution Affiliated to Madurai Kamaraj University)
Re-accredited (2nd Cycle) by NAAC with Grade "A", CGPA – 3.46 on a 4-point scale

Backlog Arrear Examination, March 2021

Course Code: PSP 4402 **Time: 3 Hours**
Course Title: Quantum Mechanics - I **Max. Mark: 75**

PART – A

Answer Any FIVE Questions **(5x 15 = 75)**

1. Explain the postulates of Bohr and derive the Bohr radius and energy with regard to the hydrogen atom.
2. State and prove Ehrenfest's theorem and explain its significance.
3. Deduce the equation of motion in the momentum operator.
4. Explain linear operators and outline the commutation relation involved in the angular momentum operators.
5. Explain and obtain the normalized Eigen function and ground state Eigen function of a Linear Harmonic oscillator using Schrodinger method.
6. Solve the radial part of Schrodinger equationfor Hydrogen atom and obtain the energy Eigen values.
7. Discuss in detail about the spin angular momentum with Pauli's spin matrices.