

Roll No.

Y – 3119
M.Sc. (Second Semester)
EXAMINATION, May/June 2021
PHYSICS
Paper–202
(NONRELATIVISTIC QUANTUM MECHANICS-1)

Time : Three Hours

Maximum Marks : 85

Minimum Pass Marks : 29

Note—Attempt *all* questions.

Unit-I

1. State and prove Ehrenfest's theorem. 17

Unit-II

2. What is spherical symmetric potential ? Determine the eigen function and eigen values for hydrogen atom. Also explain parity of the H-atom. 17

Unit-III

3. What is "Uncertainty principle" ? Derive it through operators. 17

Unit-IV

4. What is the variation principle method ? With the help of it find the ground state of helium atom. 17

Unit-V

5. What is perturbation theory ? What are its types and how they are different? Discuss the non-degenerate perturbation theory in detail. 17