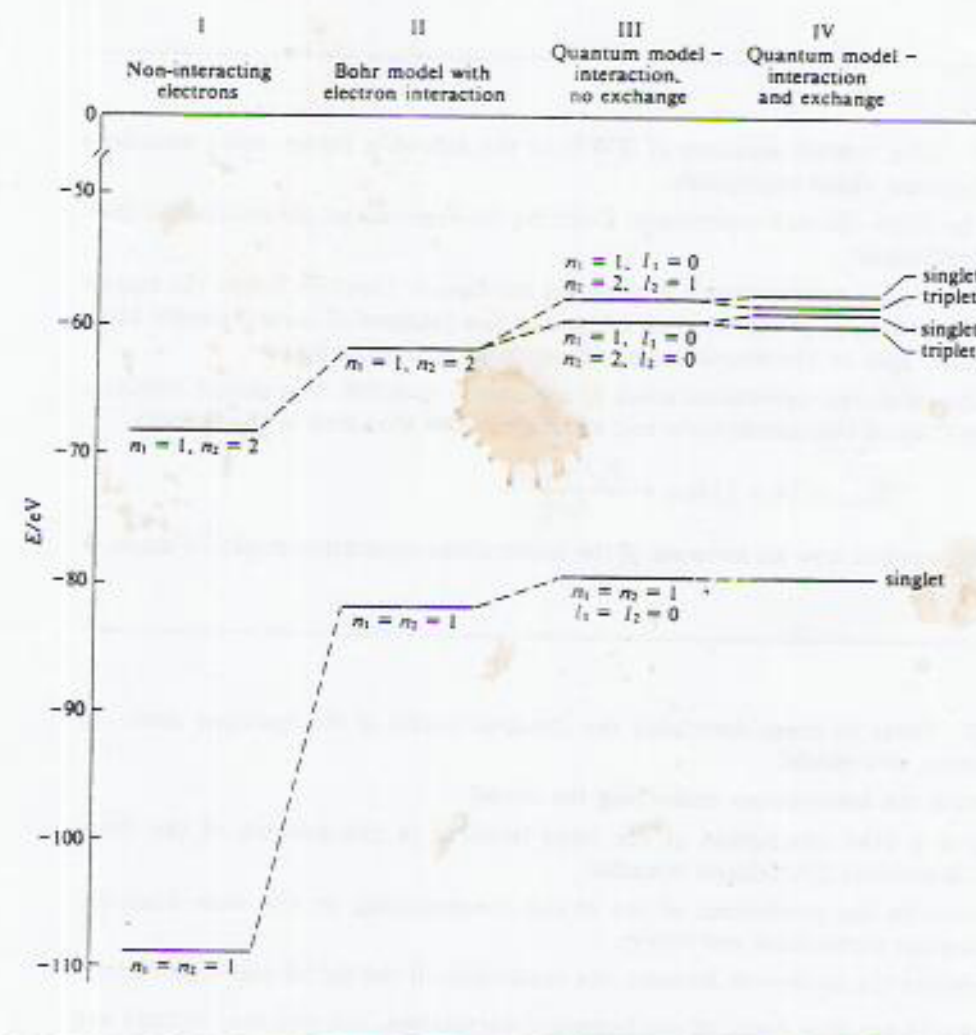


Q.3-3 Write an essay in which you explain, compare and contrast the approximations made, and the results obtained, in ALL four of the following models of the helium atom:

- a model that ignores the interaction between the two electrons.
- a Bohr model that attempts to take account of the interaction.
- a model based on a Schrödinger equation, treating the interaction as a perturbation and ignoring the Pauli exclusion principle.
- a model based on a Schrödinger equation, treating the interaction as a perturbation and respecting the Pauli exclusion principle.

Use words, simple formulas and diagrams to explain the ordering of levels in the following figure, from FT.



[END OF QUESTION PAPER]