

# Quantum Mechanics

## Zeeman Effect

**Problem 1.-** The emission spectrum of an atomic gas in a magnetic field differs from that of the gas in the absence of a magnetic field. Which of the following is true of the phenomenon?

- (A) It is called Stern-Gerlach effect.
- (B) It is called Stark effect.
- (C) It is due primarily to the nuclear magnetic moment.
- (D) The number of emission lines observed in a magnetic field is either greater or equal to the number of lines in the absence of a magnetic field.
- (E) The number of emission lines observed in a magnetic field is always twice the number of lines in the absence of a magnetic field.

**Solution:** The number of emission lines in the emission spectrum of an atomic gas observed in a magnetic field is either greater or equal to the number of lines in the absence of a magnetic field.

**Answer: D**