SUBJECT - CHEMISTRY
CLASS - B.Sc(Hons.) PART-III
PAPER - V
TOPIC - QUANTUM CHEMISTRY

Dr Hari Mohan prasad Singh
Department of Chemistry
Dr. L.K.V.D College Tasipur Samastipur

QUANTUM CHEMISTRY

Ans In the late 17th century. Issac Newton discovered classical mechanics. The laws of motion of macroscopic objects. In the early 20th century, it was found that it does not correctly describe the behaviours of very small particles such as electrons and nuclei of atoms and molecules. The behaviour of such particles is described by a set of laws called Quantum Mechanics. Quantum chemistry deals with the applicati-ons of quantum mechanics to the problems in chemistry.

Explain -

(a) Black body radiation

Radiation is emitted by any solid at any temperature due to vibration of its particles. when a body is heated, it emits electromagnetic radiation and when temperature is dropped, the energy is absorbed by the body. If a body absorbs all radiation that falls upon it, it is called the black body and the radiation emitted by it as black body radiation. No object is a perfect black body. A cavity made of a highly insulating wall with a small hole, heated to constant high temperature would serve as a black body for experimental purposes. when a cavity is heated, radiation of all wavelengths would be emitted from the hole

In 1859, Kirchoff proposed following two laws concerning black body -

1 A black body, not only absorbs all radiation falling on it but also acts as a perfect radiator when heated.

2. The radiation given out by a black body depends upon the temperature of the cavity and is independent of the nature of the interior material.