Q-2 (S)

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Characteristics of dia, para & ferromagnetic substances. [Continued ---]

Properties (i) When a diamagnetic substance is placed in a magnetic field it sets itself at right angles to the direction of the line of force as shown in fig.

(ii) When a diamagnetic material is placed in a non-uniform magnetic field it moves from stronger to weaker parts of the field.

Fig.

(iii) When a diamagnetic material is placed within a magnetic field the lines of force tend to go away from the material.

(iv) The susceptibility of diamagnetic materials is neither negative and has a small value. The permeability is less than one but can never be negative.

(v) The susceptibility neither changes with the strength of the field nor with temperature.

Ferromagnetic substances :- Ferromagnetic substa are those which are attracted by the magnets and can also be magnetised, Exc :- iron, nickel, cobalt. and their alloys.

Properties :- (i) Ferromagnetic substances show all the properties of a paramagnetic substances to a much greater degree.

(ii) The susceptibility has a positive value and the permeability is also very large.

(iii) The magnetisation $\vec{P_m}$ is proportional to the magnetising field $\vec{H}$ for small values. For moderate values of H, Pm increases rapidly and for large values of H, Pm almost remains constant due to approach of saturation stage.

(iv) The susceptibility χ_m remains constant for very small values of the magnetising field, increases with the medium values of the field and begens to decreases for very large values of the field.

The susceptibility decreases with temperature. and called the So the temperature at which susceptibility drops suddenly and the body becomes paramagnetic is called critical temperature or Curie point.