M.A./ M.Sc. Geography Part-I Paper-II- Geomorphology Topic- Theory of Isostasy

Prof. Md. Ataullah
Co ordinator, Geography
Nalanda Open University, Patna

ISOSTASY

- Isostasy simply means a mechanical stability between the up standing parts and low lying basins on a rotating globe.

CONCEPT OF SIR AIRY

- According to Airy the density of different columns of land (eg. Mountains, plateau, plains etc.) remains the same. In other words, density does not change with depth, that is, "uniform density with varying thickness".

CONCEPT OF ARCHDEACON PRATT

- The central theme of the concept of Pratt on isostas may be expressed as 'uniform depth with varying density'.

- According to Pratt, bigger the column lesser the density and smaller the column, greater the density.

- The pratt's concept of isostasy was related to the 'law of compensation' and not to 'the law of floatation'.

CONCEPT OF HAYFORD AND BOWIE

- According to them there is inverse relationship between the height of columns of the crust and their respective densities above the line of compensation. The plain of compensation is supposed to be located at the depth of about 100 km.

CONCEPT OF JOLY

- He contradicted the concept of Hayford and Bowie and rejected the level of compensation at the depth of about 100 km, as at this depth temperature will be vey high and it will lead to liquefication and thus level of compensation will not be possible. He proposed the depth of 10 miles i.e 16 km. He suggested a zonal phenomena than linear phenomena about the level of compensation.

- In other words, he did not believe in line of compensation but zone of compensation.

CONCEPT OF HEISKENEN

- According to him density of rocks varies within the column and between the columns.
- According to him density of rocks varies both vertically and horizontally.

CONCEPT OF HOLMES

- According to Holmes the higher columns are standing because of the fact that there is lighter materials below them for greater depth where there is lighter material below the smaller columns up to lesser depths.

THANK YOU