SNS COLLEGE OF TECHNOLOGY

(AN AUTONOMOUS INSTITUTION)
COIMBATORE-35

II YEAR / III SEMESTER

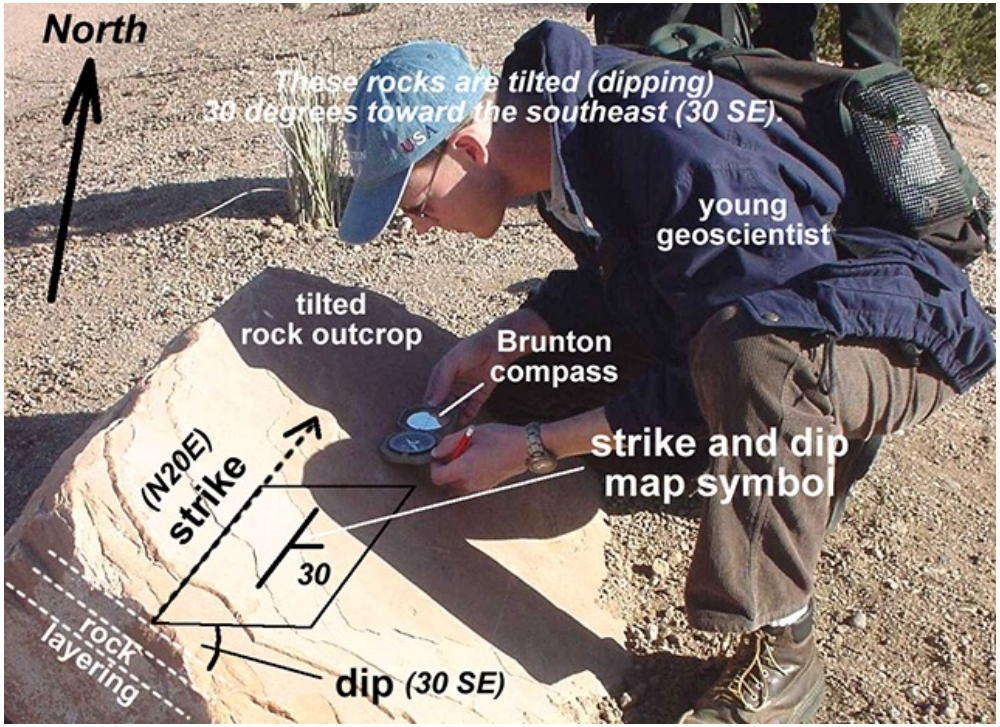
19CET201-ENGINEERING GEOLOGY

UNIT IV-STRUCTURAL GEOLOGY AND GEOPHYSICAL METHODS

Geological maps – attitude of beds, study of structures – folds, faults and joints – relevance to civil engineering. Geophysical methods – Seismic and electrical methods for subsurface investigations.

ATTITUDE OF BEDS

Attitude refers to the three dimensional orientation or positioning of a given geological feature, such as a bed, a joint, a fold, etc.

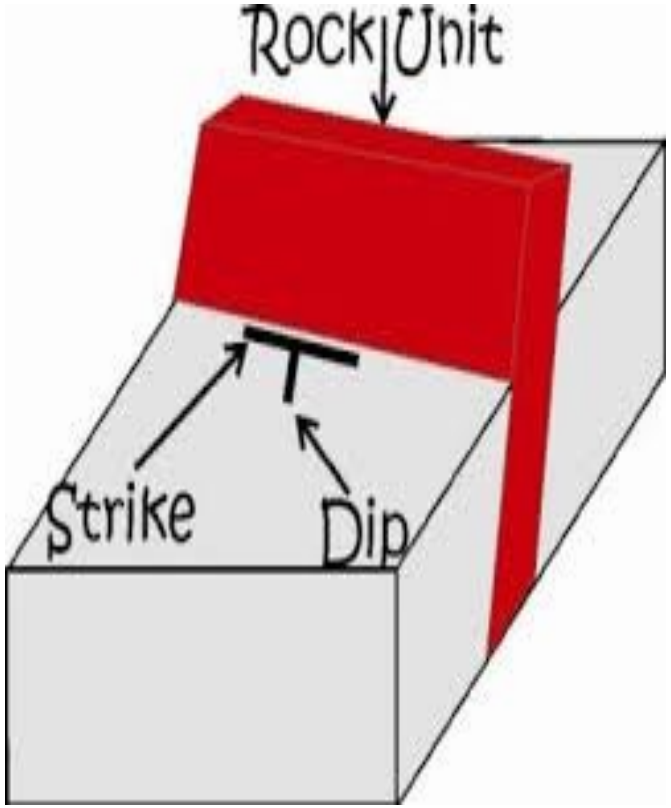


MAPPING GEOLOGIC STRUCTURES IN THE FIELD

Describing and mapping the orientation of a geologic structure such as a inclined sedimentary bed, a fault plane, a joint plane etc involves determining…

- **Strike (trend)**
- **Dip (inclination)**

Hence attitude of a bed is defined as the strike and dip of a bed.


Rock Unit
Strike
Dip


Strike
N
Dip

DIP(INCLINATION)

The angle of inclination of the surface of a rock unit or fault measured from a horizontal plane.

Includes both an angle of inclination and a direction toward which the rock is inclined.

Dip values always are in the range 0-90˚. A dip angle of 0˚ defines a horizontal attitude. 90˚ of dip describes a vertically oriented plane.

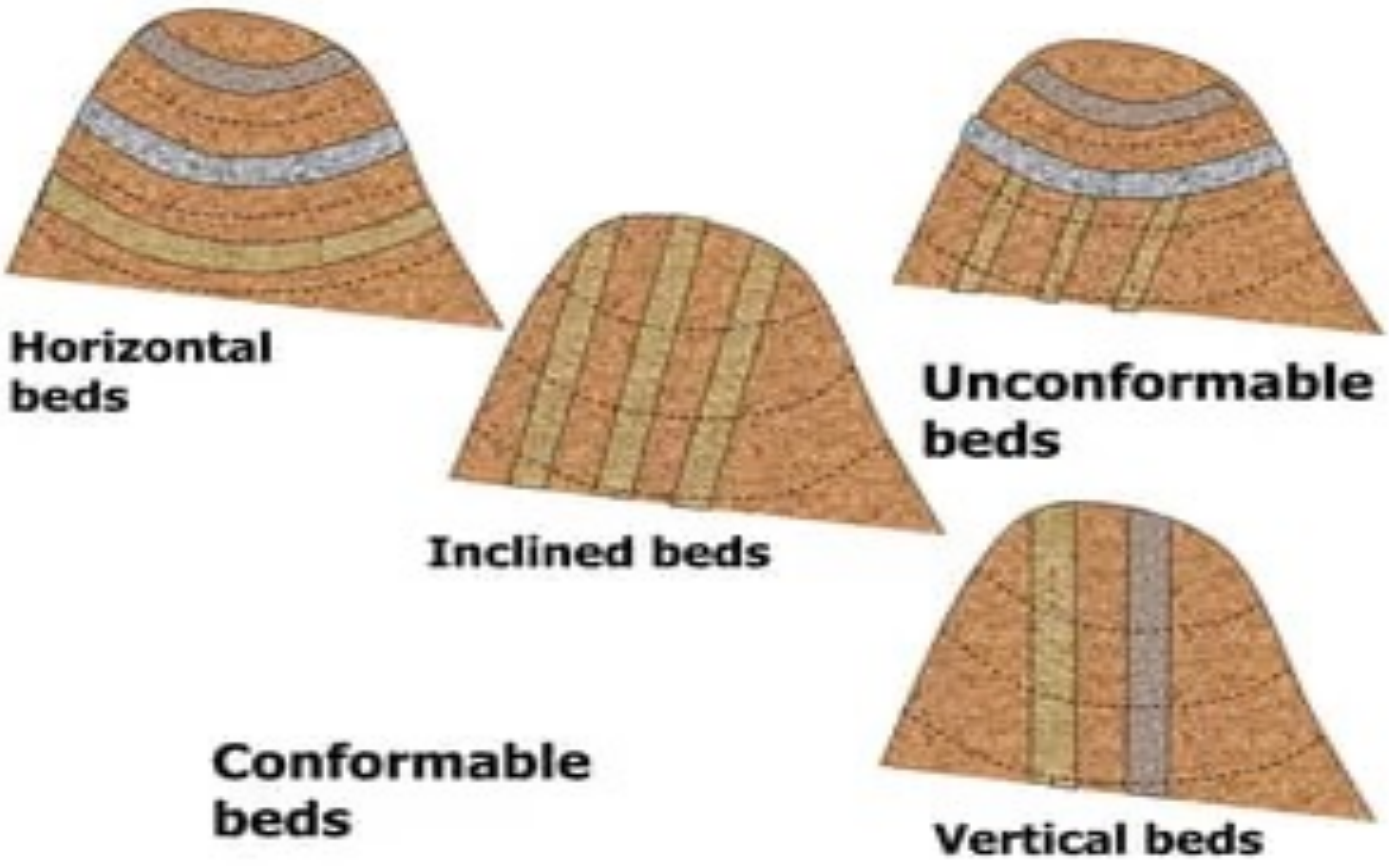
0-20˚-Shallow

20-50- Moderate

50-90-steep

TYPES OF DIP

- True dip
- Apparent dip
- Primary or Initial dip
- Secondary dip
- Local or regional dip


Horizontal beds
Inclined beds
Unconformable beds
Conformable beds
Vertical beds

Unconformable bed

STUDY OF STRUCTURE

FOLDS:

Folds are one of the most common geological structures found in rocks

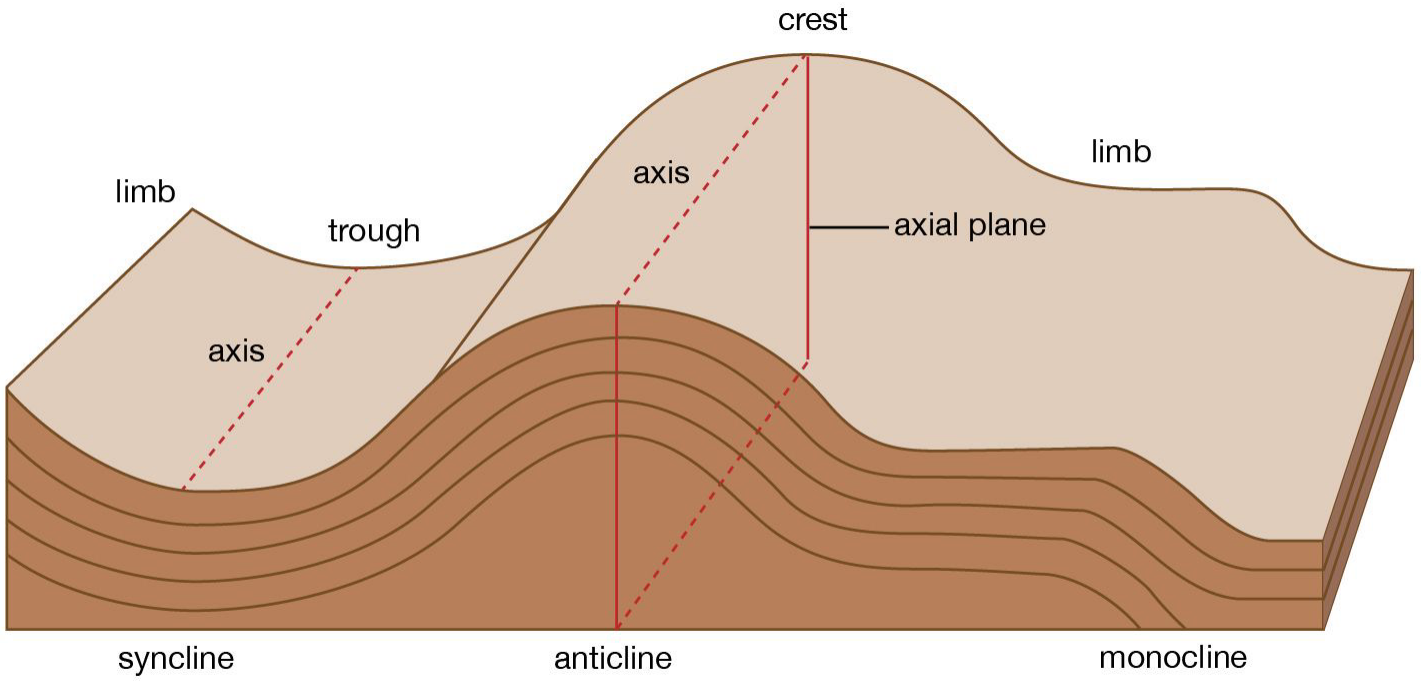
When a set of horizontal layers are subjected to compressive forces, they bend either upward or downward. The bend noticed in rocks are called folds.

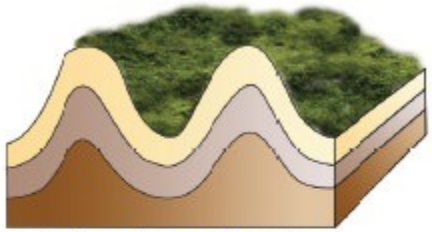
Classification and types of folds:

- **Anticline**
- **Syncline**

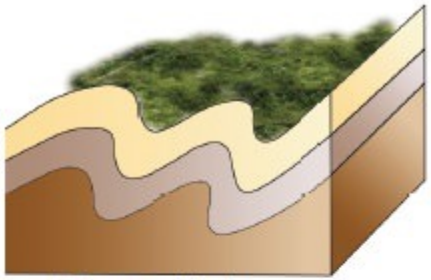
FOLDS

TYPES OF FOLDS

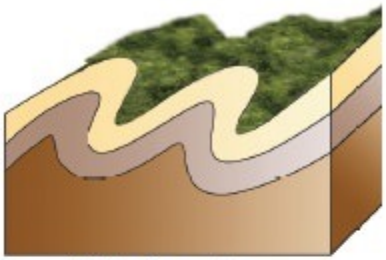




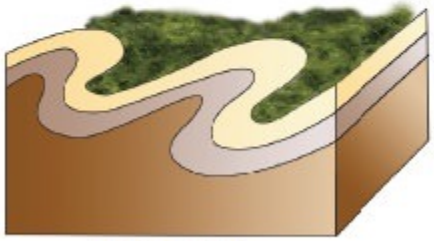
A. Open (Symmetrical)



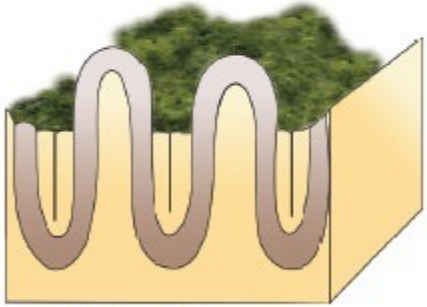
B. Asymmetrical



C. Overturned



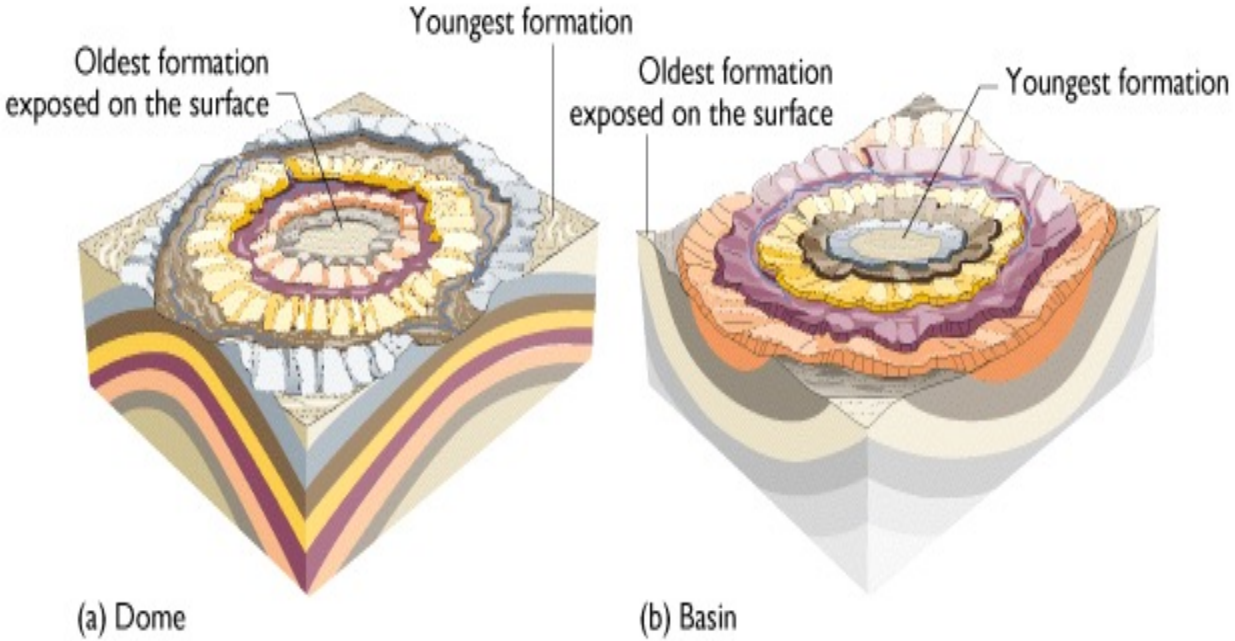
D. Recumbent



E. Isodinal

CHEVERON FOLDS

DOMES AND BASINS



FAULTS

Faults are the most unfavorable and undesirable geological structures at the site for any given purpose, i.e.for location of reservoir; as foundations site for construction of dams, importance

THANK YOU…