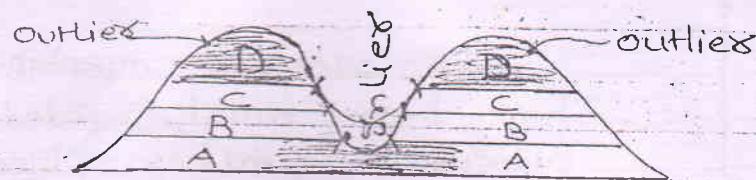


## Inliers and Outliers



### \* Inliers :-

An inlier consists of older beds entirely surrounded by younger beds i.e. an inlier is composed of rocks which are surrounded on all sides by the rocks which are geologically younger. The rocks of inliers may belong to the same series or older series. Usually inliers occur in the valley bottom or depressions.

Inliers are caused due to:

- (1) Differential erosion (2) Unconformity and overlap (3) faulting (4) folding (5) erosion of a dome (6) Dip-Slope variation (7) incomplete submergence and subsequent deposition (8) Previous intrusion.

### \* Outliers :-

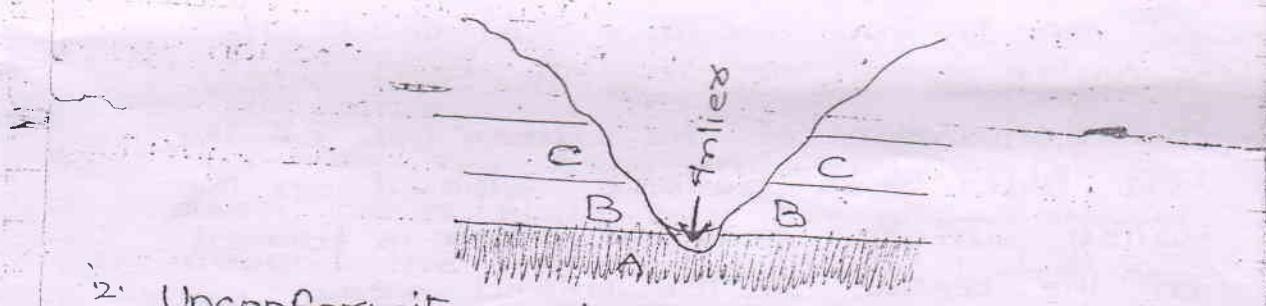
An outlier consists of younger rock entirely surrounded by older rocks i.e. an outlier is composed of rocks which are surrounded on all sides by the rocks which are geologically older. The rocks of outliers may belong to the same series or younger series. Usually outliers occur on the top of the hills i.e. they are found on the high lying grounds as a direct result of denudation. Outliers are caused due to:

- (1) Denudation (2) younger intrusion (3) Excision of Basin.

\* Inliers are formed in a variety of way:

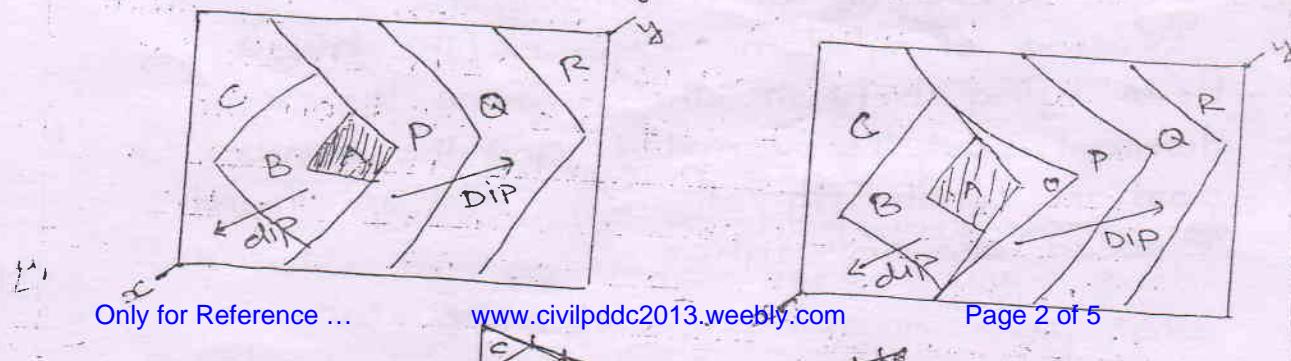
### 1. Differential erosion:

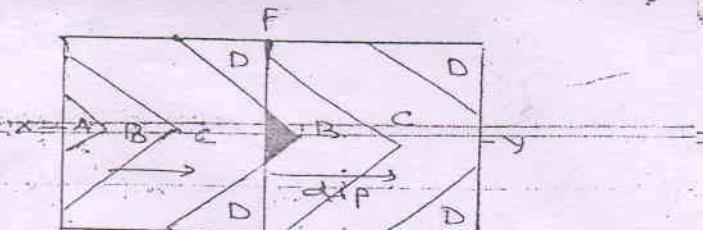
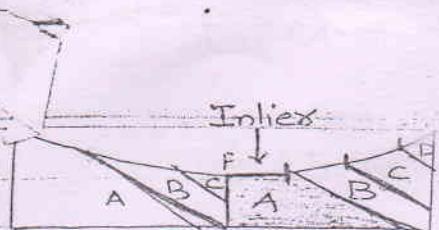
In the course of weathering, various agents are continuously at work on the earth surface. Due to differential erosion, physiography goes on changing. Stratified beds are denuded one after the other and in some places valleys, depressions or basin are formed. In such land forms, oldest bed is found exposed giving rise to a structural known as inlier. In the diagram oldest bed A is an inlier.



### 2. Unconformity and Overlap:

In case of unconformity or overlap beds of the older series are exposed along the valley. The oldest bed of the older series is surrounded on one side by the younger bed of the same series and on the other side by the younger series.





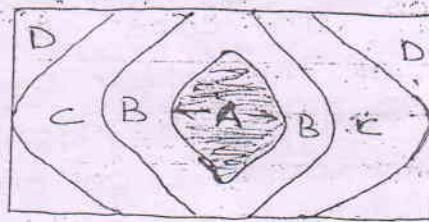
### Faulting :-

Inliers may also be formed due to faulting. Due to faulting, younger beds along the downthrow side come in contact with the older beds of the upthrust side. Especially in case of strike fault occurring in a valley position the older bed is found surrounding by younger beds. 'A' is an inlier.

### Folding :-

- (i) Due to erosion of an anticline in a valley:-

In an anticline, the limbs dip away from the axis of the fold. After the denudation of the upper cap of the fold, older beds become exposed on the valley surface. Thus an inlier is formed at the centre of the folded area.



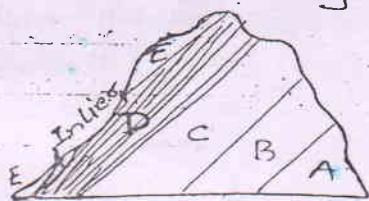
- (ii) Due to erosion of a dome:-

Erosion of a dome exposes the older beds lying beneath the surface. Upper domical part is denuded and the lower portion consisting of older bed is found exposed as an inlier.



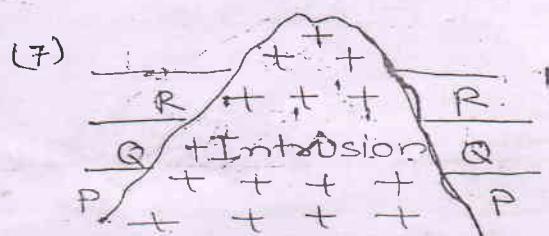
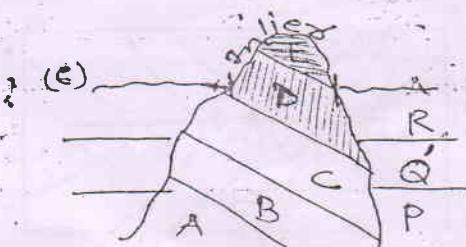
### 5: Dip-slope relation:

When dip and slope are in the same direction and slope greater than the dip, along the valley portion inlier is expected to occur. Thus inliers may be caused under peculiar condition of topography. In the diagram 'd' is an inlier.



### 6: Incomplete submergence and subsequent deposition:

In this case, submergence of an area takes place and deposition starts around the older formations. Later on submergence ceases and the remaining portion of the older formation is surrounded by new deposition. Older patch becomes an inlier.



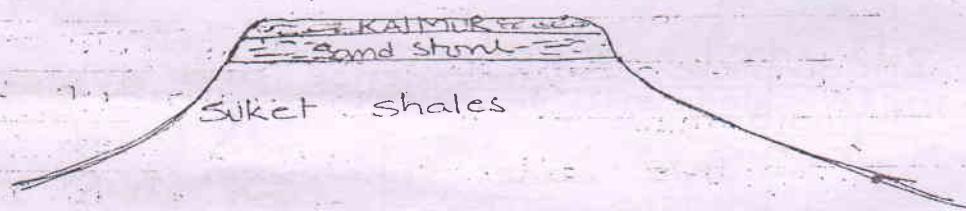
### 7: Previous intrusion exposed:-

Previously existing intrusion may subside by earth movement. Around such an intrusion new deposition may take place. In such a case, intrusion becomes an inlier.

Outliers are formed in the following ways:-

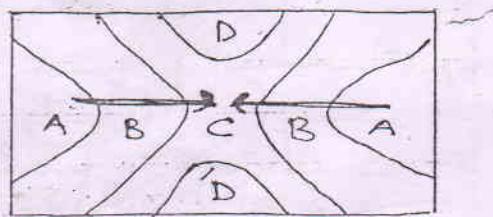
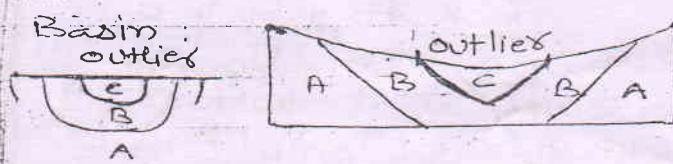
### Differential Erosion:

By constant denudation, horizontal or uniformly dipping strata may become undulated giving rise to hills and valleys. The top of the hill consists of younger bed and the lower beds are older in age. Such a condition gives rise to an outlier. In Rajasthan, Chittaur ridge consists of Kaimur sandstone and the lower slopes consists of silt shales. Kaimur sandstone, the younger is surrounded on all sides by silt shales, the older formations hence Chittaur ridge is an outlier.



### Folding: (Syncline & Basin):

Due to erosion of a syncline or a basin in a valley: Erosion of a syncline into valley position gives rise to the formation of an outlier.



### Due to Younger Intrusion:

When intrusion takes place into the previously existing strata, it becomes

- an outlier

Only for Reference ...

