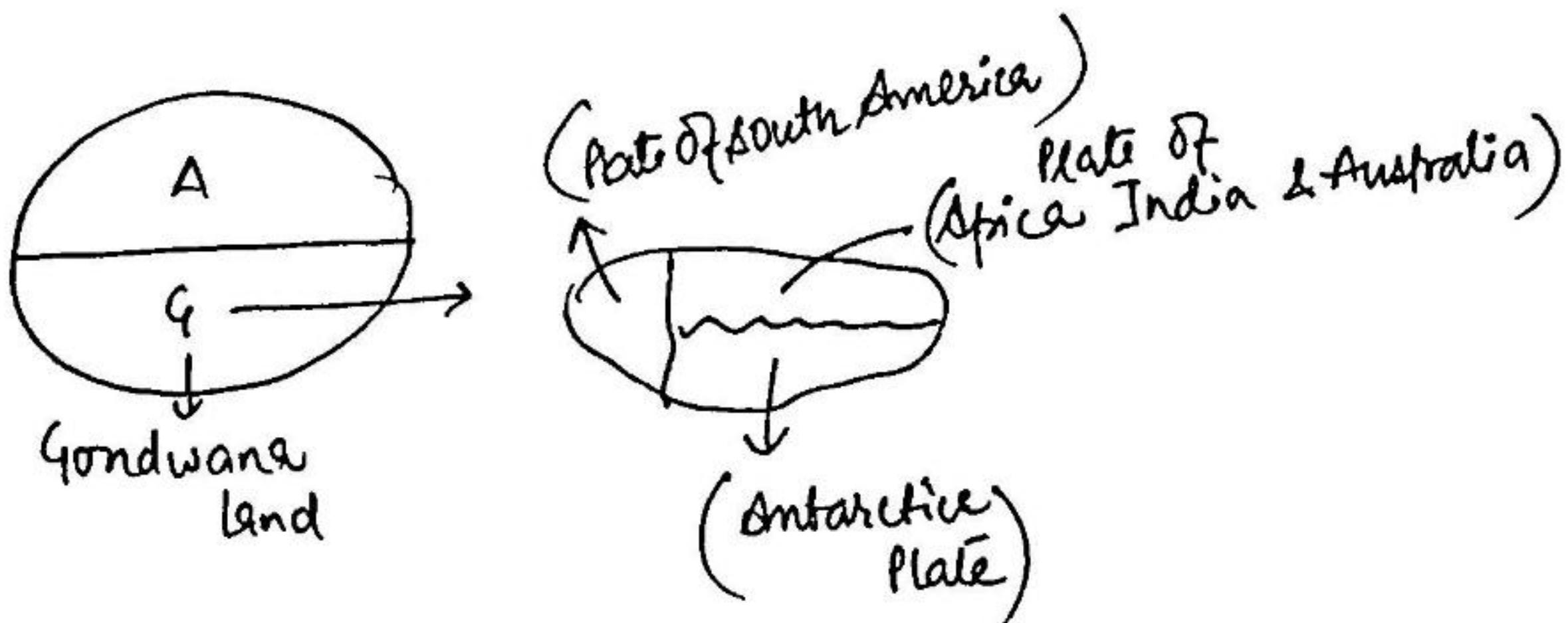
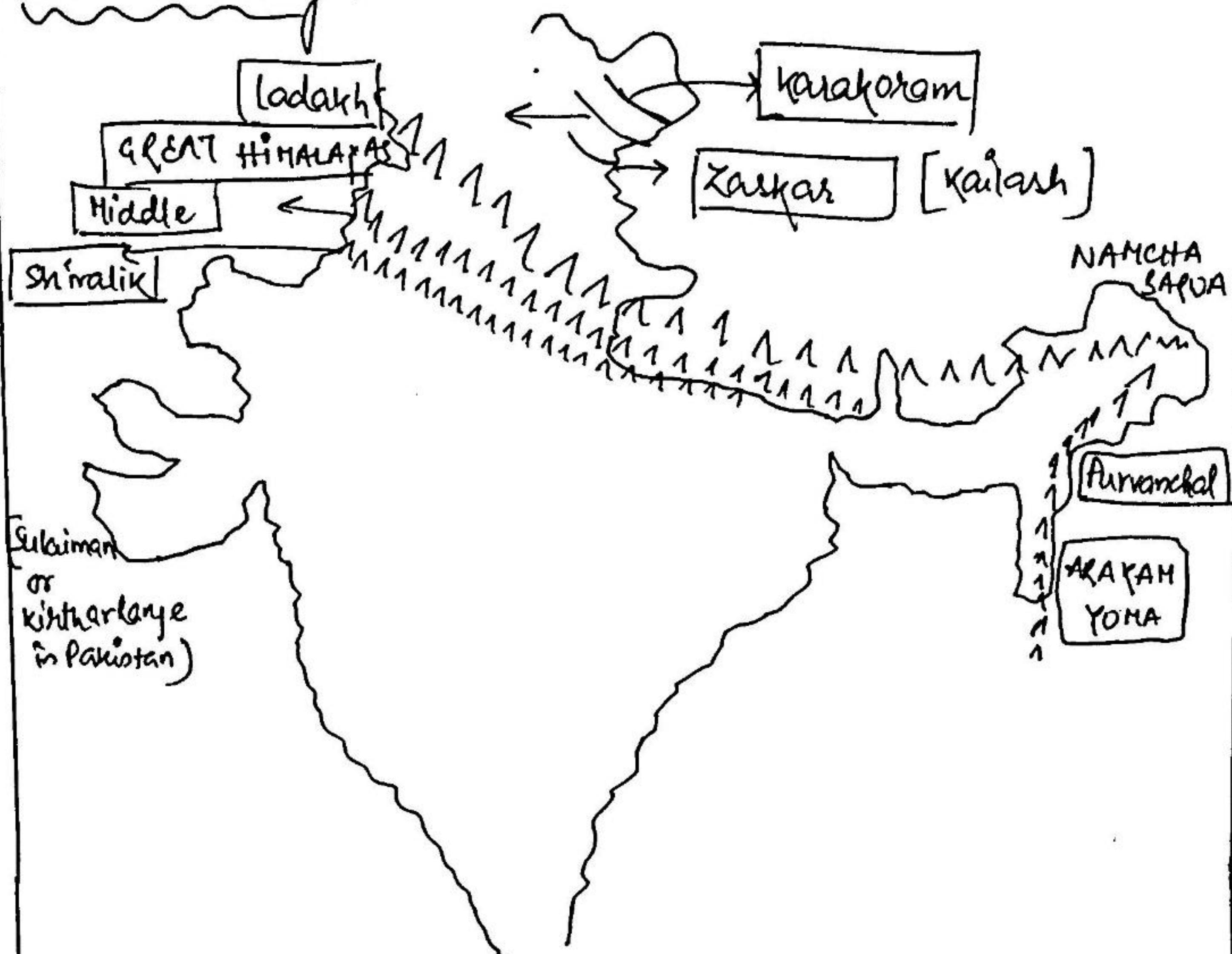


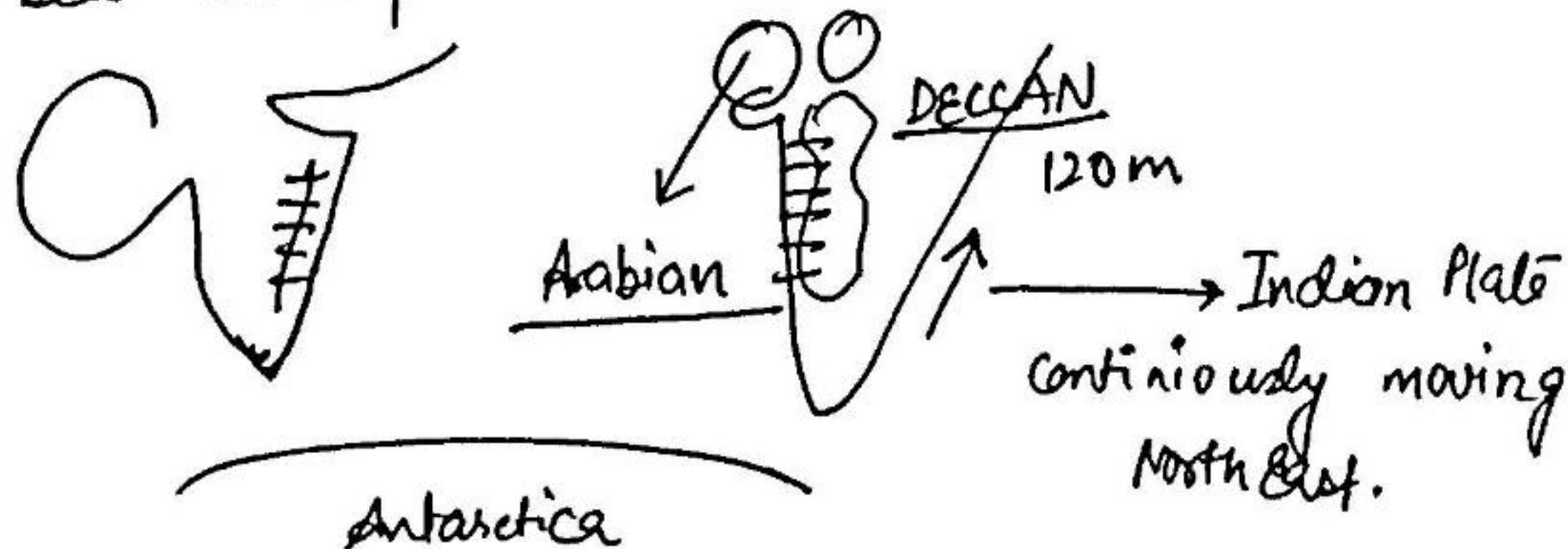
①

Upliftment of the Himalayas :-

Upliftment of Himalayas by taking the reference of plate tectonic theory :-



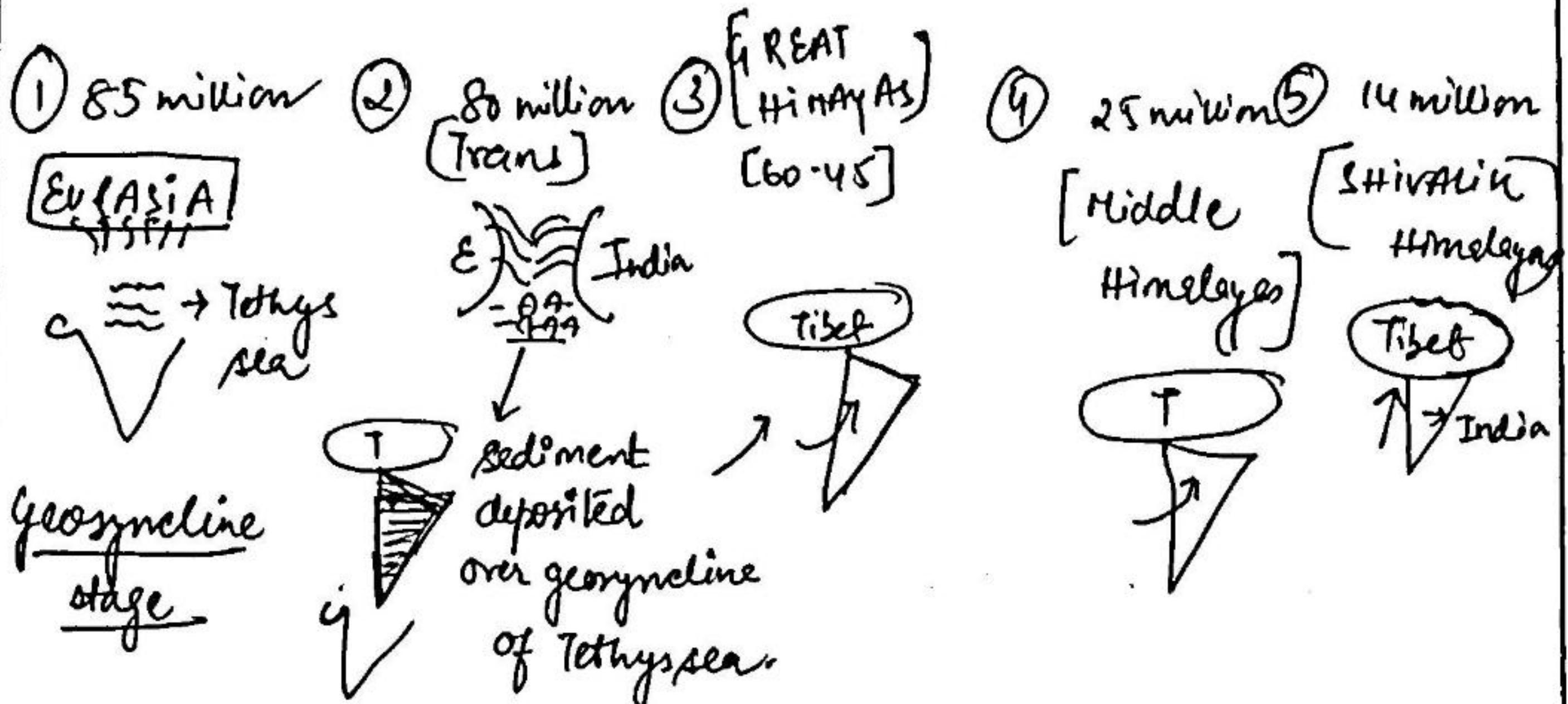
Indian plate broke from African plate, and there Arabian sea developed.



According to plate tectonic theory, the plate of India, Africa and Australia was linked with plate of Antarctica and physical location of Indian plate was between plate of Africa and Antarctica. It means from the last 200 yrs, the plate of India with the plate of Africa under the influence of thermal convection current able to drift in North East direction.

The theory also provided evidences that approximately 120 yrs ago, plate of India get segregated from the plate of Africa once they able to cross the hotspot located in the central basin of the Indian Ocean. The substantial evidences of this segregation is along fault line along western margin of India and eastern coast of African plate. The theory also substantiates that with the widening of fault along the western margin of India, the process of silent volcanism has also taken place over the surface to create physical features like, Deccan plateau, Kathiawar & Malwa. However after crossing hotspot and equator, the plate of India propagated in an isolated manner towards North East. In the course of time, approximately 80 millions back, Indian plate converge with the plate of Eurasia to uplift the young fold mountains of Himalayas between them.

Stages of upliftment :-

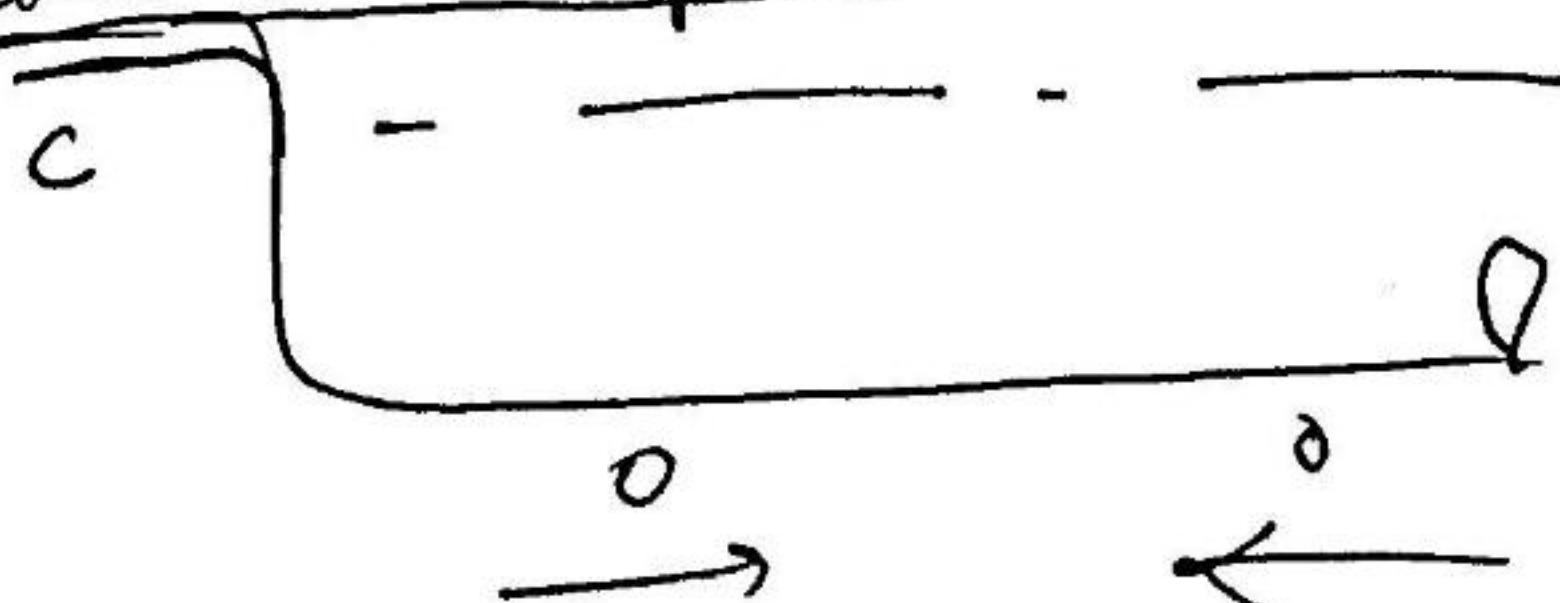


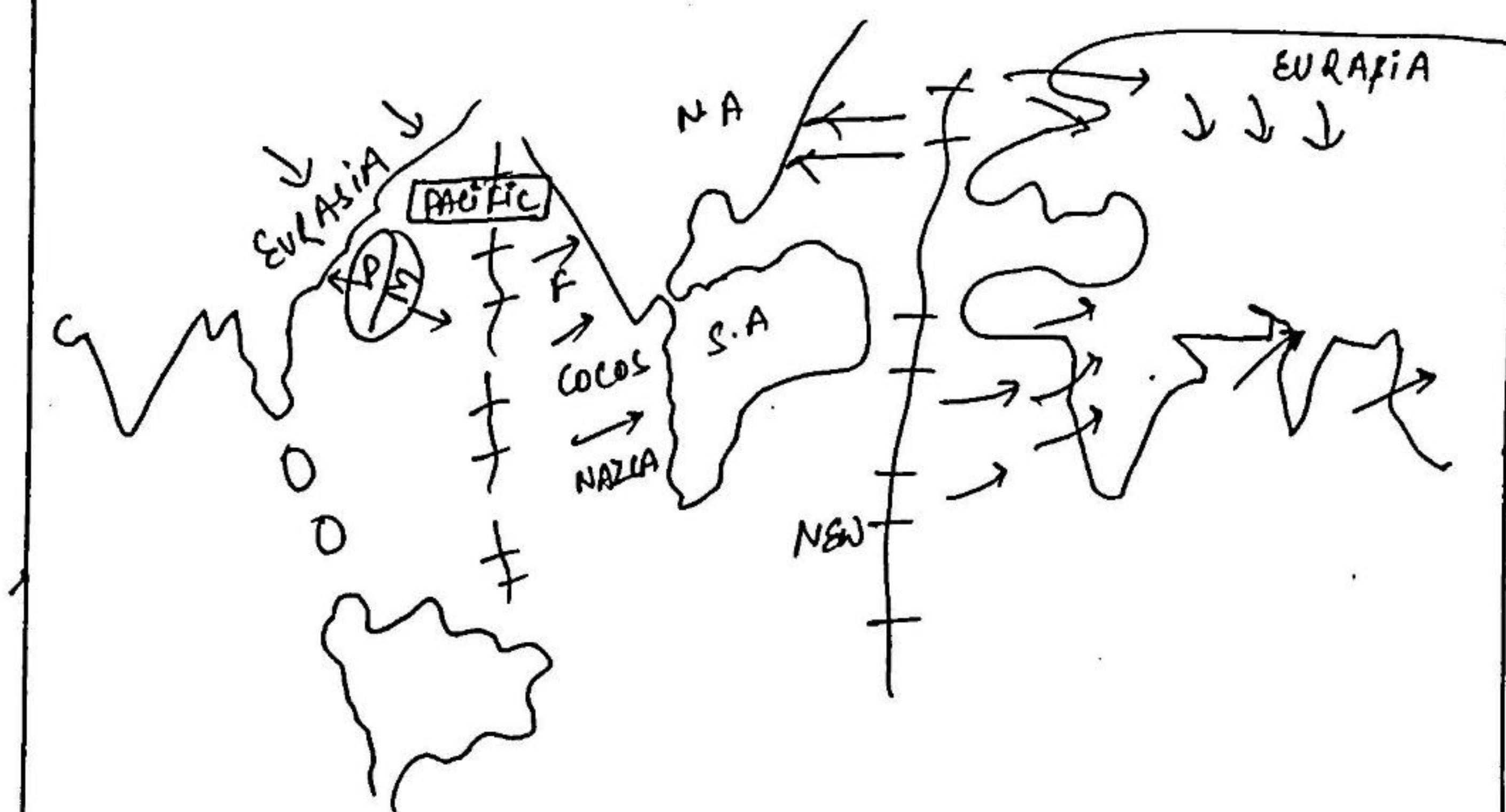
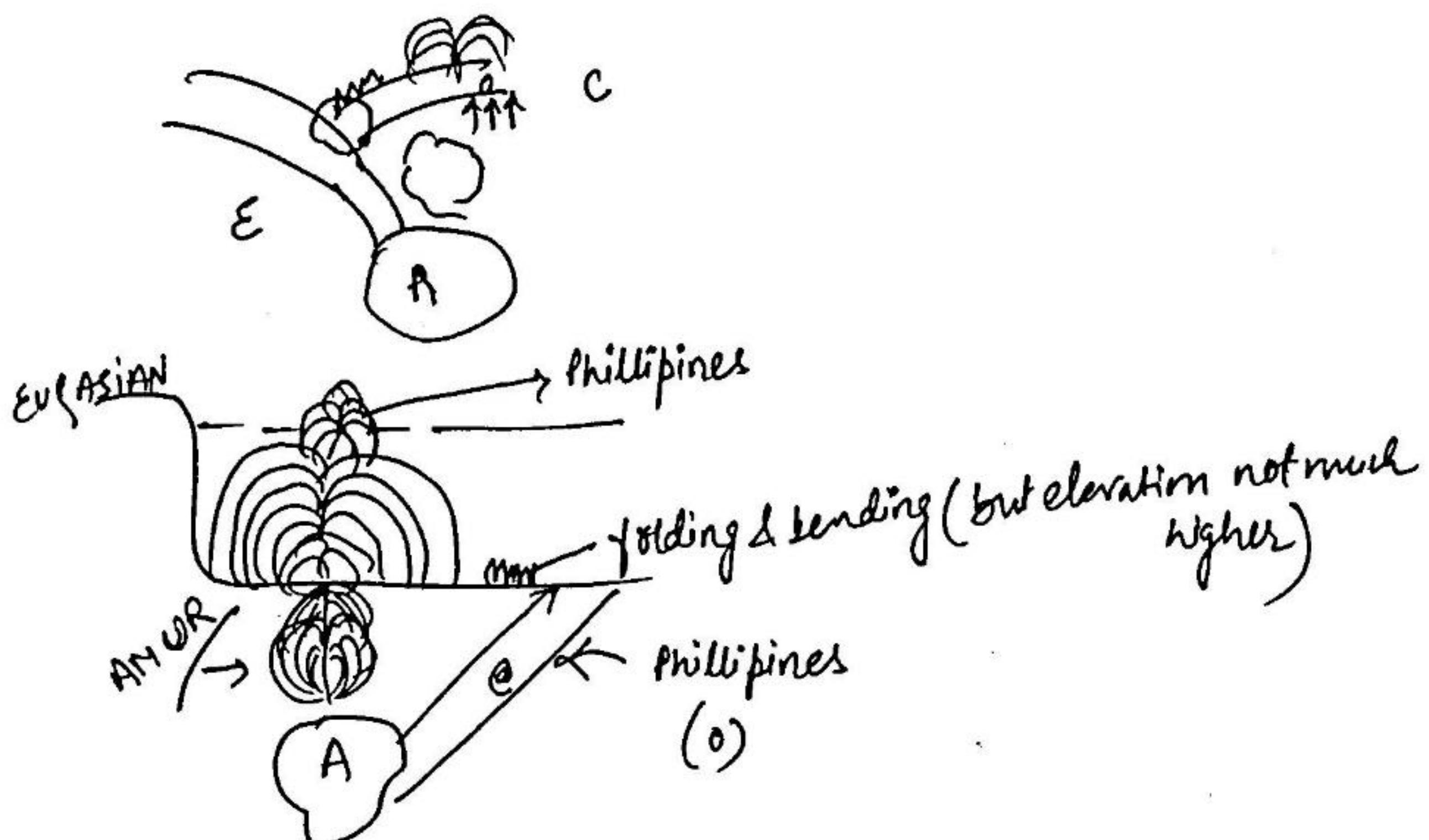
→ According to plate tectonic theory approximately 85 million yrs ago, the physical location of Indian plate is in proximity with the plate of Eurasia & Tethys geosyncline was also located between the respective plates. During the time the reverse originating from the plate of Tibet & plate of India have their outflow on the basin of Tethys geosyncline. By this resultant phenomenon, abundant amount of sediments also get deposited on the floor of Tethys sea and when Indian plate converge with the plate of Eurasia, much more bending and compression also taken place in the same sediments of Tethys sea. Basically, the upliftment of Himalayas between the respective plates has also taken place by sequential, compression, folding and bending of Tethys sediments.

→ In the 2nd stage, the plate of India due to its North East propagation collide with the plateau of Tibet with its western margin. By the subsequent phenomenon, by the sediments along the western margin of Tethys uplifted sequentially as trans

Himalayas. In the course of time, north east propagation of Indian plate, it able to ~~turn~~ rotate anti clockwise and comes very much closer to the plate of Eurasia. This tectonic phenomenon has produced the first major compressional thrust, over the sediments of Tethys sea to uplift loftiest mountain range of the whole world in west - east direction called as great himalayas. By this tectonic phenomenon approximately 25 yrs ^{nearly} back, the plate of India by its continuous anti-clockwise rotation came closer to plateau of Tibet to produce 2nd major compressional thrust over the sediments of Tethys sea and uplifted the intermediate range of middle or lesser Himalayas in west - east direction. At last, with the complete conjunction of the plate to India to the plate of Eurasia remaining sediments of Tethys sea get uplifted as the outer most range of Himalayas called as Shivalik Himalayas. This resultant phenomenon also regarded as closing of Tethys sea and final insipid thrust. It should be noted that, after the upliftment of Shivalik Himalayas, no further range of Himalayas evolve between the respective plates but still, all the range of Himalayas are showing increment in their average alteration due to the regular compressional activity between the respective plates.

Oceanic Oceanic Plate Convergence :-





→ Oceanic Oceanic plate convergence :- According to this theory, when 2 plates of oceanic composition converges with each other then, the plate located away from the continental margin would subduct within the plate located near the continental mass. It is because, the plate of deep oceanic basin are more denser than the plates near the continental margins. By convergence, and subduction tectonic phenomenon like formation of trenches, explosive type of volcanic eruption, formation of several physical features & disintegration of crest would take place. This particular type of conver-

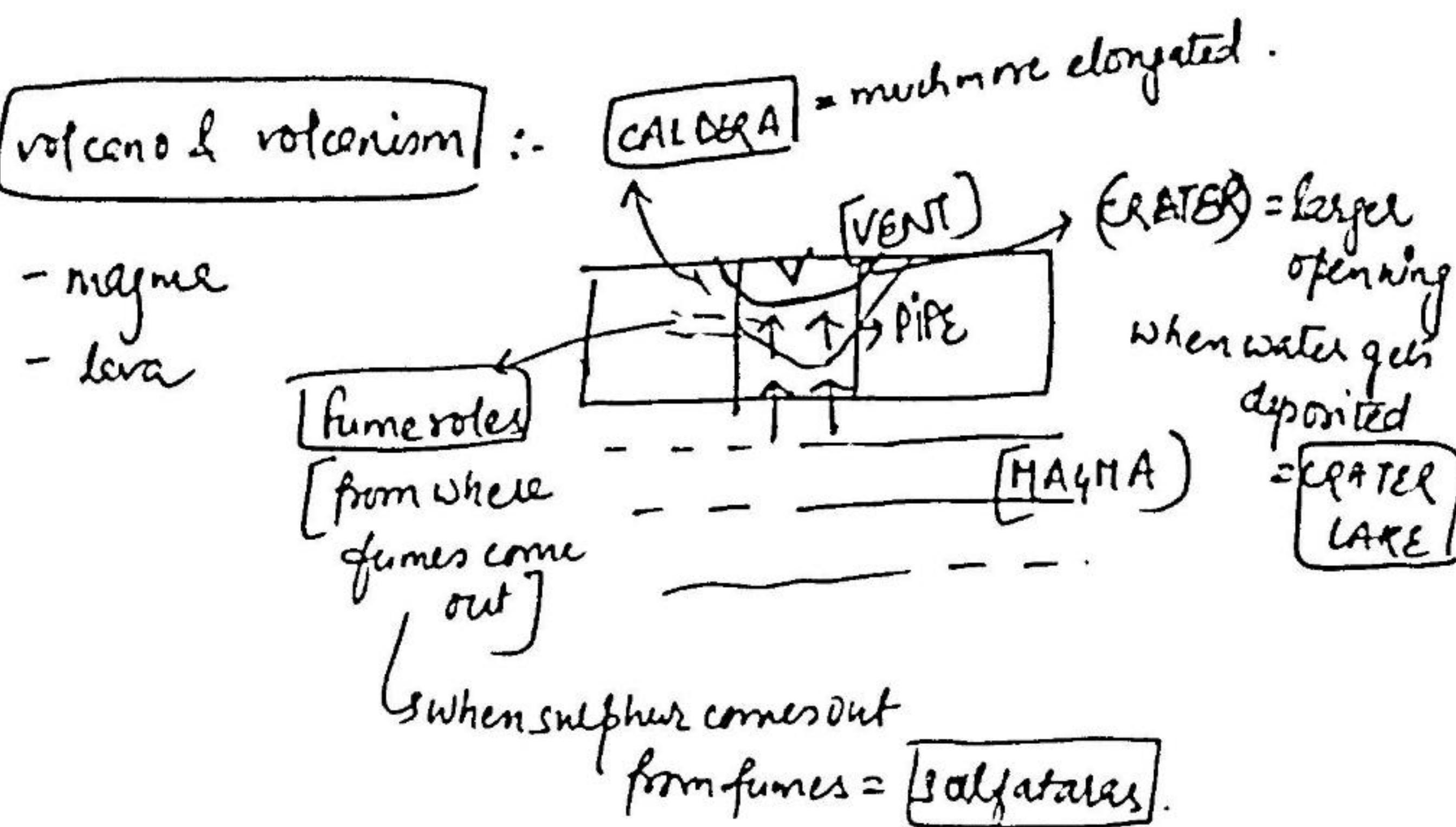
gence is taking place between major pacific and minor mariana plate. The subduction of denser pacific plate has created mariana trench along the adjoining boundary of respective plates, regarded as the most deepest trench over the surface of earth. Apart from this one more category of convergence is taking place between the plate of Eurasia Amur and the minor oceanic plate of Philippines. Formation of Philippines trench along the adjoining boundary and explosive type of volcanic eruption over the surface of non-subducting amur plate substantiate this phenomenon of continental oceanic convergence. It should be noted that deposition and solidification of lava over the surface of Amur plate has created several volcanic relief features along the western coast of pacific ocean. The elevation of these relief feature above the sea level get the recognition of Philippines archipelago.

The theory of plate tectonics provide substantial evidences that the phenomenon of divergence remain almost complementary to that of convergence. By these resultant tectonic phenomenon, the formation and disintegration of crust would take place in co-equal manner, by which the surface area of crust remain constant, although formation of new crust and disintegration of crust would normally take place over and of oceanic plate, while continental plate remain almost constant. However in the process of divergence & convergence several physical features like

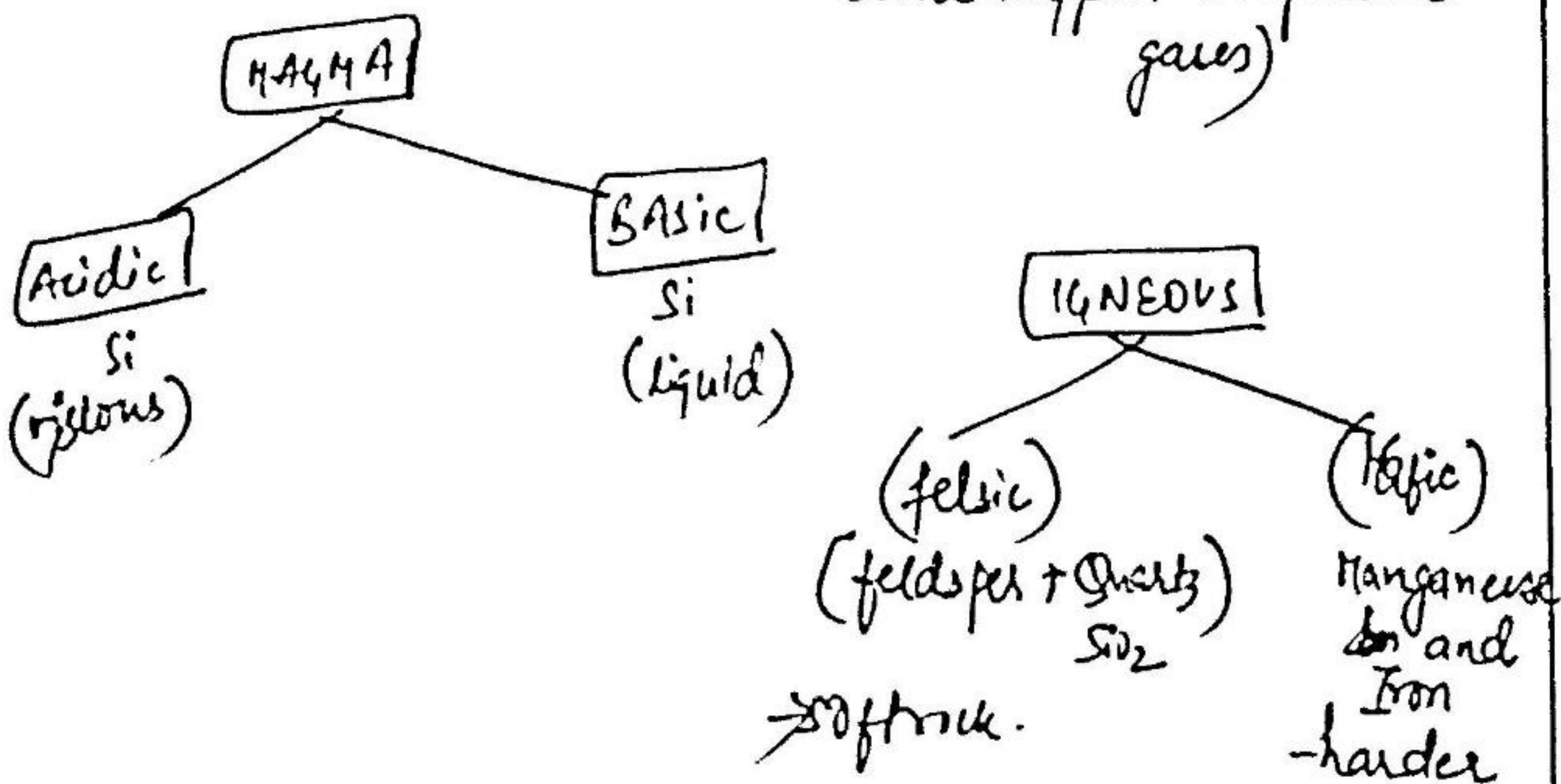
mountain, plateaus, trenches, island, fault and of catastrophic events i.e., earthquake and volcanoes also takes place over the surface of earth.

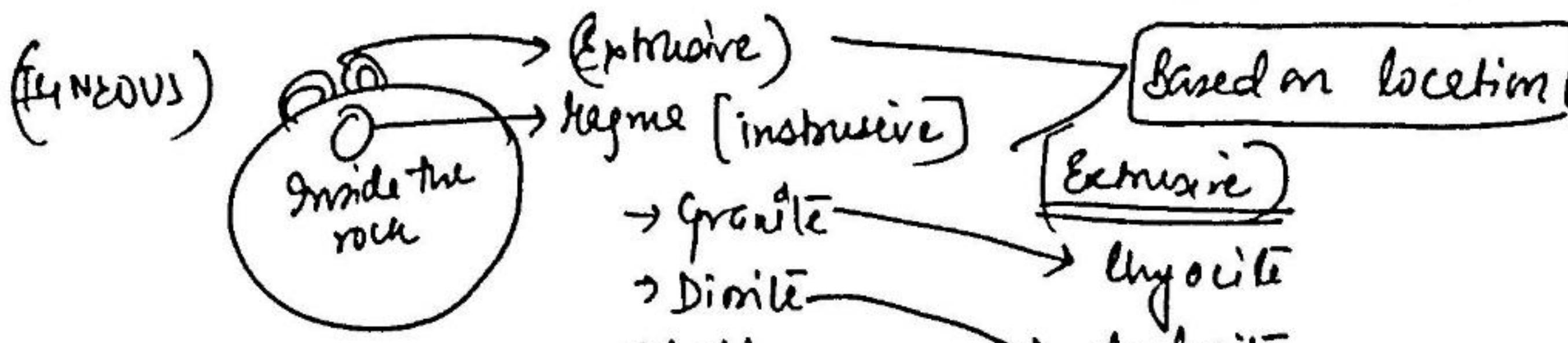
Limitations:-

① margins only explained interior mountains not explained.



Magma → Tephra (& some fragments)
→ Pyroclast (with composition of fragments & some trapped suspended gases)





→ Volcano is a central vent over the surface of earth by which semi molten magma containing fragments of different size and trapped gases erupt over the surface of earth to regulate the balance of energy between the intrinsic and upper layers of earth. On the other hand, process of volcanism includes not only the formation of Magma but also its metamorphism, ejection, deposition and transformation over the surface. Basically, the volcanism is the process by which interior of the earth releases excess amount of heat over the surface to maintain the profile of equilibrium between the surface & centre of earth.

Under this process of volcanism, the semi molten magma is classified into different categories:-

Tephra magma contain more fragments of rocks while the pyroclastic magma with the fragments of rock also contain some trapped gases like Carbon, Methane, CO_2 , carbon monoxide etc... Similarly, based on concentration of silica magma would be classified into acidic and basic category. Acidic magma is more viscous & highly viscous and cover less surface area after eruption on the other hand, basic magma more liquid less viscous, highly mobile and cover more surface area post solidification.

~~It should be noted~~

It should be noted that, felsic and semifelsic category of magma like diorite, granite in their counterpart Andesite & gabbro are acidic highly siliceous and more viscous in composition, on the other hand, mafic category of magma including gabbro magma and basaltic lava are less siliceous, more liquid and less viscous in formation & composition.

