

Q. With the reference to the theory of plate tectonics, explain the formation of Himalayas.
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Answer:—

Plate tectonic Theory:

→ It dealing with the dynamics of Earth's outer shell-the lithosphere-that revolutionized Earth Sciences by providing a uniform content for understanding mountain building process, volcanoes, and earthquakes as well as the evolution of Earth's surface and reconstructing its past continents and oceans.

→ This theory of plate tectonics proposed that earth's lithosphere is divided into 7 major plates & 6 minor plates namely:

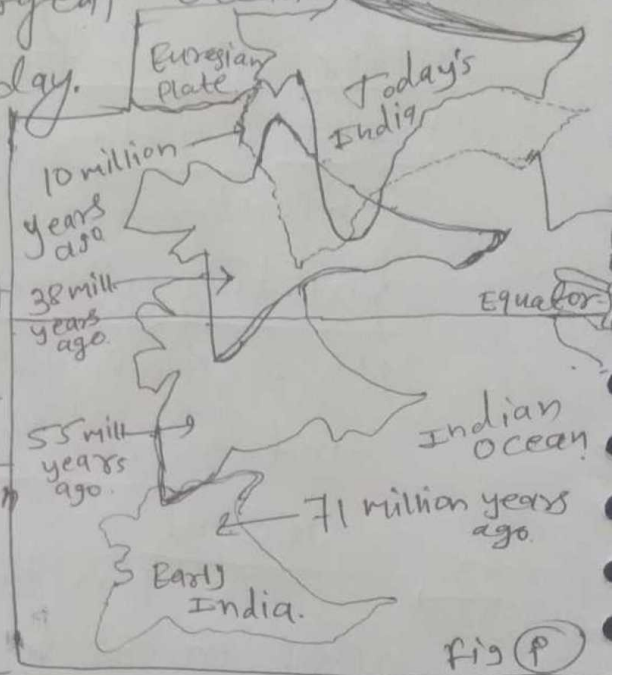
Major plates	Minor plates
(i) Antarctica & the surrounding oceanic plate	(i) Cocos Plate: bet ⁿ Central America & Pacific plate
(ii) North American	(ii) Nazca Plate
(iii) South American	(iii) Arabian Plate: mostly Saudi Arabian landmass
(iv) Pacific plate	(iv) Philippine Plate
(v) India-Australia-New Zealand plate	(v) Caroline Plate
(vi) Africa with eastern Atlantic floor plate.	(vi) Fuji Plate: N-E of Australia.
(vii) Eurasia & other adjacent oceanic plate	

→ The Himalayan mountain range and Tibetan plateau have formed as a result of the collision between the Indian plate & Eurasian plate which began 60 million years ago

and continue today.

→ India was situated off the Australian Coast and separated from Asia by the Tethys ocean. At time 80 Ma Tethys ocean floor would have been subducting northwards beneath Asia and the plate margin would have been a convergent Ocean-Continental One just like the Andes today.

→ As seen in fig (P), Tethys Ocean floor was not completely subducted, most thick segment on Indian margin of ocean were scrapped off which are what now for the Himalayan mountain range.



→ From about 50-40 Ma the rate of northward drift of Indian continental plate slowed to around 4-6 cm/year

→ This mark the collision betⁿ Indian & Eurasian continental plate, closing tethys sea & the Himalayan uplift initiation.

→ The continental crust thickened due to folding & faulting by compressional forces pushing up the Himalaya & Tibetan Plateau. It mark the end of volcanic activity.

→ Scientists believe that the process of rising Himalayas is still continuing by more than 1 cm/year. as India continues to move northwards into Asia. However, forces of weathering & erosion are lowering the Himalayas at about same rate.