CHAPTER 11
CONCLUSIONS

From the analysis of available data and the subsequent discussion, the following tentative conclusions may be drawn:

(1) The historical and recent record of the seismic activity of northeast India show that the region is seismically very active.

(2) The geologic and tectonic setting of northeast India is very complicated.

(3) Based on geologic, tectonic and seismic characteristics, the entire northeast India may be divided into three tectonic units. These are (a) Eastern Himalaya Tectonic Unit (b) The Tectonic Unit covering Shillong plateau, Mikir hills massif and adjacent area and (c) Indo-Burma Tectonic Unit.

(4) By application of Statistics, three active regions and four quiet regions may be identified in northeast India.

(5) Statistical tests show that the epicentral distribution of micro and macroearthquakes of northeast India is not homogeneous. Three clustering activity area have been identified in this region.

(6) The strain release characteristics of the earthquakes of the northeast India show a linear pattern of strain generation. The study of strain characteristics in different blocks of this
region show that accumulated strain is maximum in and around Shillong plateau and also along Kopili lineament. If the accumulated strain is released instantaneously it may give rise to an earthquake of magnitude of 8.0 mb.

(7) Temporal variation of the ratio of S wave to P wave travel time during the period January, 1985 to March, 1988 is found to be zig-zag in nature. The average of all the \( t_s/t_p \) values is 1.66 which is less than the normal value of 1.77. This probably indicates that the whole of northeast India is now undergoing dilatancy. Study of the temporal variation of \( V_p/V_s \left( \frac{t_s}{t_p} \right) \) ratio yields a relation between magnitude and \( t_s/t_p \) anomaly duration time similar to those found for other parts of the world. A study of temporal variation of 'b' values indicate that there is diminution of 'b' values before each major earthquake of the region but all diminishions are not associated with earthquake occurrence.

(8) Of the 25 earthquakes whose focal mechanism has been studied, majority of them show thrust fault type mechanism with slight strike-slip component. The result of seismic slip vector indicates that there is a subduction of Indian plate beneath the Burma plate as well as Burma plate overriding the Indian plate. Indian plate has been underthrusted along the eastern Himalayan zone and move towards northeast. Lohit and Mishmi dislocation which are generally considered to be thrust may be strike-slip faults.

(9) 'Assam gap' observed by some researchers may be a
permanent gap of first kind. Some seismic gaps of second kind have been found to exist in the northeast India which may be the sites of future great earthquake. A qualitative study of various categories of seismic potential show that some areas of northeast India have high seismic potentials. These high potential region is a seismic gap, which for historic or tectonic reasons is considered likely to produce a large shock within the next few decades.

The regions covered by latitude $24.0^\circ$N to $26.3^\circ$N, longitude $89.2^\circ$E to $92.0^\circ$E and latitude $25.3^\circ$N to $28.0^\circ$N, longitude $92.0^\circ$E to $94.0^\circ$E may be the likely sites of future big earthquakes in the northeast India.