

11.8.5 Silicates

A large number of silicates minerals exist in nature. Some of the examples are feldspar, zeolites, mica and asbestos. The basic structural unit of silicates is SiO_4^{4-} (Fig. 11.7) in which silicon atom is bonded to four oxygen atoms in tetrahedron fashion. In silicates either the discrete unit is present or a number of such units are joined together via corners by sharing 1,2,3 or 4 oxygen atoms per silicate units. When silicate units are linked together, they form chain, ring, sheet or three-dimensional structures. Negative charge on silicate structure is

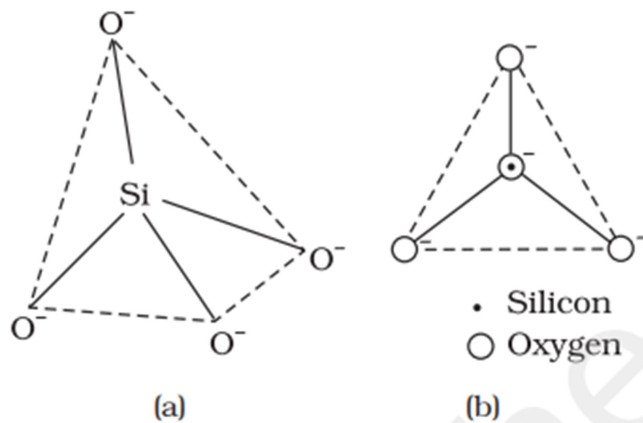


Fig. 11.7 (a) Tetrahedral structure of SiO_4^{4-} anion; (b) Representation of SiO_4^{4-} unit

neutralised by positively charged metal ions. If all the four corners are shared with other tetrahedral units, three-dimensional network is formed.

Two important man-made silicates are glass and cement.