We investigate the band structure and topological phases of silicene embedded on halogenated Si(111) surface, by virtue of density functional theory and tight-binding calculations. Our results show that the Dirac character of low energy excitations in silicene is almost preserved in the presence of silicon substrate passivated by various halogens. Nevertheless, the combined effects of charge transfer from suspended silicene into the substrate, interlayer interaction between silicene and substrate, and symmetry breaking which originates from van der Waals interaction with the substrate, result in a gap E_g1 in the spectrum of the embedded silicene. We further take the spin-orbit interaction into account and obtain its strength and the resulting enhancement in the gap E_g2. Both E_g1 and E_g2 which contribute to the total gap, vary significantly when different halogen atoms are used for the passivation of the Si surface and for the case of iodine, they have values of 68 and 82 meV, respectively. To examine the topological properties, by using projected tight-binding Hamiltonian of suspended silicene we calculate the Berry curvature and Z_2 topological invariant. Our results based on Berry curvature calculated in Brillouin zone, and Z_2 invariant reveals that silicene on halogenated Si substrates has a topological insulating state which can survive even at room temperature for the substrate with iodine and bromine at the surface.