MODULE – 5

Machine Foundations
Use of EHS Theory for analysis

A block type machine foundation is designed in such a way that the weight of foundation block is $W_f = 0.25$ ton and weight of machine is $W_m = 0.5$ ton with foundation block area of 75cm x 90cm and height is 15cm. Using EHS theory, find the displacement amplitudes at operating frequency $f = 1500$ RPM for (a) vertical (b) horizontal modes of vibrations. Consider amplitude of external dynamic load $Q_0 = 188.64$ kg. Also consider Poisson’s ratio of soil = 0.25. Use three types of soils with (i) $G=50$ kg/cm², (ii) $G=100$ kg/cm², (iii) $G=200$ kg/cm². Obtain the results for both constant force type and rotating mass type excitations. Take eccentricity = 1 mm and eccentric weight = 75 kg.