DEPARTMENT OF CIVIL ENGINEERING

MAJOR EXAM :CEL727 DESIGN OF INDUSTRIAL STRUCTURES (2011-12): PART B

Time allowed: 0.5 hours **Date :** 23 November 2011
Venue : IV 323 **Max marks : 10**

NOTE: (a) This question paper contains one question and one page only. (b) All questions are compulsory. (c) **Assume any data which you deem is necessary but not supplied. (d)** Draw neat and clear sketches wherever required.

Q1. Determine the base dimension B necessary for the concrete block foundation shown in Fig. 1 (all dimensions are in mm) for a reciprocating type machine for safety against resonance and vibration amplitude. Following specifications are supplied by the manufacturer:

Unbalanced mass vibrating horizontally	= 0.2kg
Associated maximum displacement	= 50mm
Unbalanced mass in vertical direction	= 0 kg
Operating frequency	= 50 Hz

The machine weighs 500kg and its centre of gravity is located at a height of 200mm above the top of the foundation. The soil has a coefficient of uniform elastic compression equal to $100x10^4$ kN/m^3.

(**10 marks**)

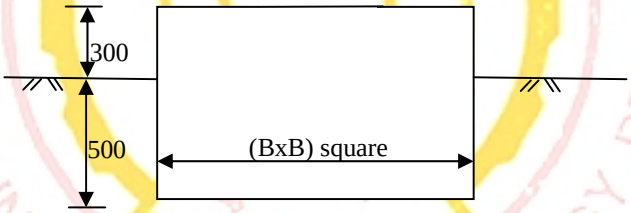

Fig. 1 Foundation elevation for Question 1 (All dimensions in mm)