Roll No..... .....

23421

M. Tech. 2nd Sem. Civil Engg. (Specialisation in Structual Design) Examination – December, 2014

STRUCTURAL DYNAMICS & EARTHQUAKE ENGINEERING

Paper : MTSD-201

Time : Three Hours] *[Maximum Marks : 100*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt any *five* questions. All questions carry equal marks.

1. Formulate an equation of motion for under-damped single degree of freedom system. 20

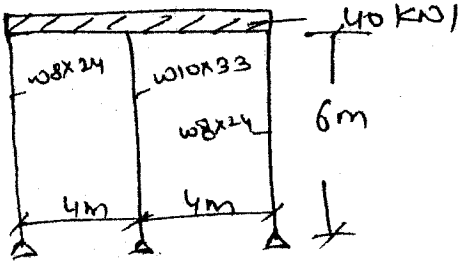
2. Explain the following in detail. 20

(a) Impulse load.

(b) Amplitude of motion.

(c) Frequency & period.

3. Determine the natural frequency for horizontal motion of the steel frame. Assume the horizontal girder to be infinitely rigid & neglect the mass of the column. 20



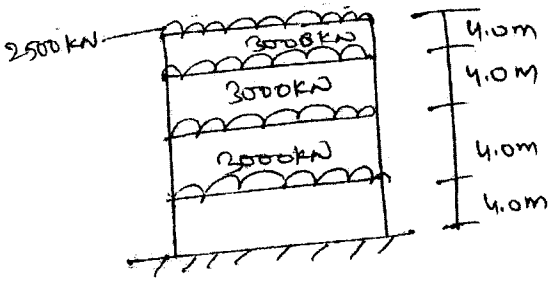
4. Derive the expression for numerical evaluation of Duhamel's integral-undamped system. 20

5. Write down the following in detail with example. 20

   (a) Over damped system in detail.

   (b) Critical damped system.

6. A four storey reinforced concrete frame building is situated at Delhi. The height between the floors is 4.0 m and total height of building is 16 m. the dead load and normal live load is lumped at respective floors. The soil below the foundation is assumes to be hard rock. Assume building is intended to be used as a hospital. Determine the total base shear as per IS 1893 (Part 1) : 2002. Distribute the base shear along with the height of the building. 20



7. Drive the expression for damped harmonic excitation 20

8. Write down the expression for solution of the differential equation of motion. 20
