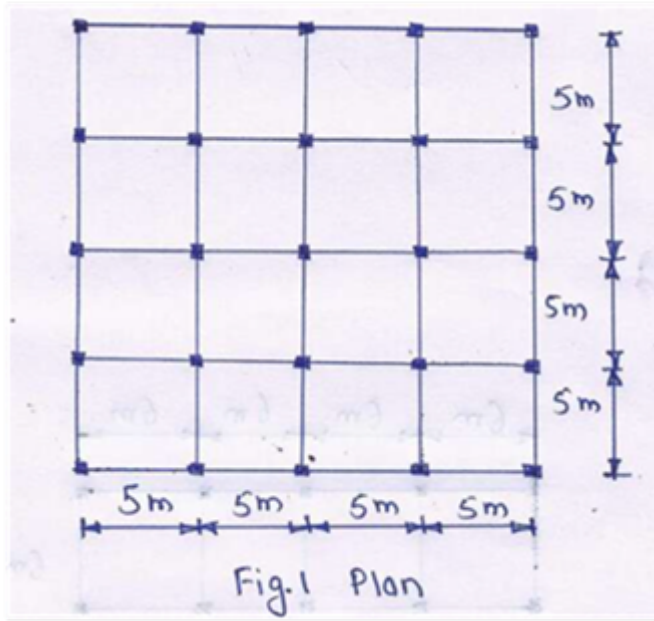


Seat No. **OCT-NOV 2025 WINTER EXAMINATION****1154 B.Tech. CBCS****Sub. Name: Earthquake Engineering****Sub. Code: 67559/83733/84013****Day and Date: Thursday ,18-12-2025****Total Marks: 70****Time: 02:30 PM To 05:00 PM**

- Instructions:**
1. All questions are compulsory
 2. Assume suitable data wherever necessary and mention it boldly
 3. Draw neat labelled diagrams wherever necessary
 4. Figures to the right indicate full marks
 5. Use of Scientific calculator is allowed

Special Inst.: Use of IS 1893_2016 (Part I) is permitted.

- Q1) Attempt any one question [7]**
- a. Differentiate between seismograph and seismogram with neat sketch. [7]
 - b. Differentiate between magnitude and intensity of earthquake. [7]
- Q2) Attempt any two questions. [14]**
- a. Derive the equation of motion for a Single Degree of Freedom (SDOF) system subjected to damped critical free vibration. [7]
 - b. Explain logarithmic decrement with help of response graph. [7]
 - c. A machine foundation weighs 90 KN. The spring constant is 12550 KN/m and Dashpot constant (C) is 220 KN.s/m. Determine Natural frequency, Critical damping ratio and logarithmic decrement. [7]
- Q3) A Four storied RC radio station building with Ordinary Moment Resisting Frame (OMRF) as shown in Fig. 1 with live load 4 KN/m^2 is to be constructed in Delhi on Hard soil. Calculate seismic forces on the structure by seismic coefficient method using IS 1893 part (I). All beams and columns are 450 mm x 450 mm in size. Thickness of roof and floor slab 150 mm thick. The wall is of 230 mm thick all around. Floor to floor height is 3 m. Density of concrete 25 KN/m^3 and Density of Masonry is 20 KN/m^3 . Assume 5% damping. [14]**



- Q4) Attempt any two questions. [12]**
- Explain Philosophy of Earthquake Resistant Design. [6]
 - What are the planning aspects required for earthquake resistance design of structure. [6]
 - Explain various vertical geometric irregularities in building with neat sketch. [6]
- Q5) Attempt all questions. [12]**
- Explain behavior of unreinforced masonry building subjected to seismic load. [6]
 - Explain with neat sketch Jacketing of beam. [6]
- Q6) Attempt all questions. [11]**
- Explain with neat sketch Visco elastic dampers. [5]
 - Explain the working principle of base isolation with the help of a neat sketch. [6]

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

- 1] (101) Bachelor of Engineering (84013) Earthquake Engineering Part 4 SEM 7
- 2] (101) Bachelor of Engineering (67559) Earthquake Engineering Part 4 SEM 7
- 3] (1154) B.Tech. CBCS (83733) Earthquake Engineering Part 4 SEM 7