

Name:	 <b>UPES</b> UNIVERSITY WITH A PURPOSE
Enrolment No:	

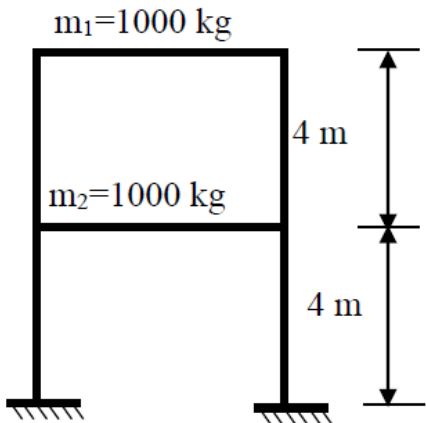
**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**  
**End Semester Examination, July 2020**

<b>Course:</b> Seismic Design of Structures <b>Program:</b> M.Tech. Structural Engineering <b>Course Code:</b> CIVL 7013 <b>Instructions:</b>	<b>Semester: II</b> <b>Time 03 hrs.</b> <b>Max. Marks: 100</b>
--	--

**SECTION A**

S. No.	Question	Marks	CO
Q 1	What are the types of Body waves and surface waves?	4	CO1
Q 2	Write a short note on Push over analysis.	4	CO3
Q 3	What are the methods available on site Modification?	4	CO4
Q 4	What are the basic concepts for ductile performance structures?	4 = 2+2	CO1 CO2
Q 5	Mention the different Variable affecting sectional ductility.	4	CO2

**SECTION B**

Q 6	Calculate Loads on the below structure by Response spectrum Method considering infills. <div style="text-align: center; margin: 10px 0;">  </div>	20	CO3
Q 7	Sketch and describe a RCC Column showing qualitative ductile detailing.	10	CO1
Q 8	Explain soft storey & discuss its performance of soft storey building in past earthquakes. How will you avoid soft storey?	10	CO2

**SECTION-C**

Q 9	Discuss case study for seismic retrofitting of RC building with jacketing and shear walls	20	CO4
-----	---	----	-----

Typical Features of the Building

- Number of Stories—eight stories with basement
- Year of construction—1966
- Lateral load resisting system—reinforced concrete frames
- Floor system—two-way slab with beam
- Foundation—grid foundation with retaining walls around the perimeter
- Typical floor plan and elevation are shown in Figure

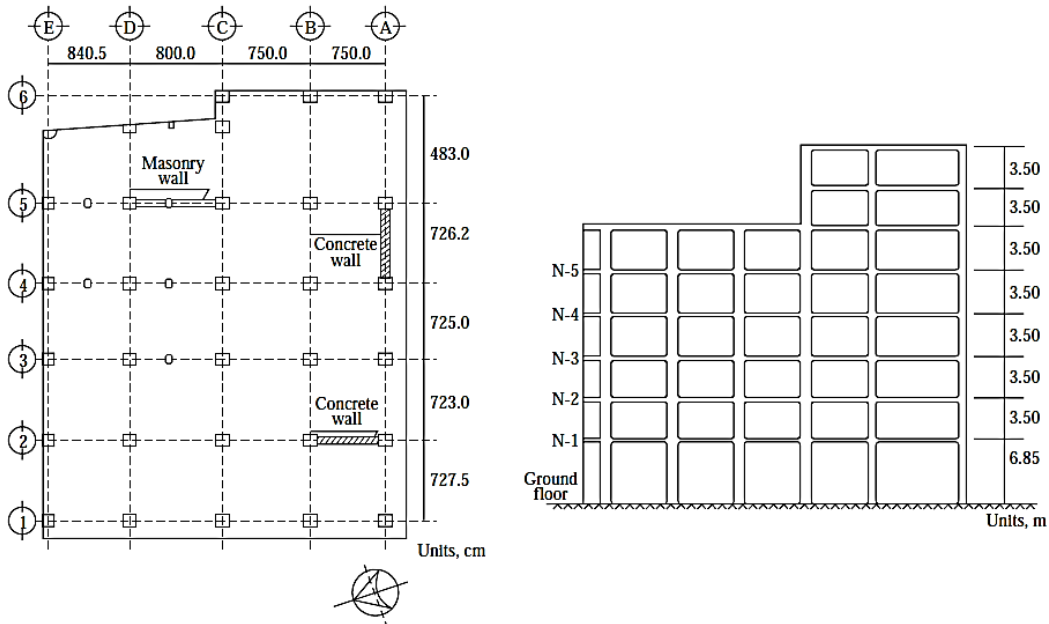
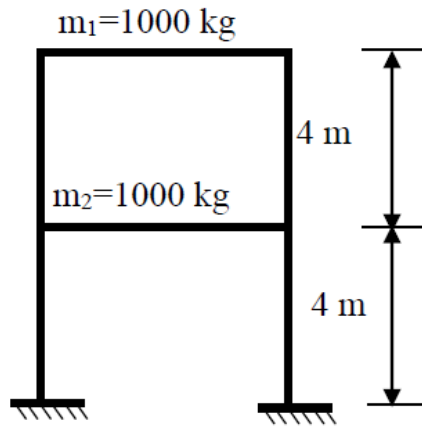


FIGURE 30.1 Plan and elevation of the building (Jara et al., 1983).

Q 10

A 2 storey building need to be designed. Storey height is 3m. Location: Dehradun. Calculate Loads on the structure by Equivalent Static Method  
 Live load = 2 kN/m<sup>2</sup>  
 Assume Necessary data if required



20

CO2