

9.5- Singh

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT  
TEST -3 EXAMINATION- May 2017  
B. Tech (VIII)/ M. Tech (II) Semester

COURSE CODE: 12 M1WCE213  
COURSE NAME: Earthquake Resistant Design of the Structures  
COURSE CREDITS: 03

MAX. MARKS: 35

MAX. TIME: 2 Hrs

*Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.*

1. Write the basic elements of the base isolation as a strategy to protect the structure from earthquake. [5]
2. Explain in detail the Elastomeric base isolation systems and Sliding base isolation systems. [5]
3. Determine the horizontal and vertical stiffness of square (300 mm×300 mm) and circular (dia. = 300 mm) bearing as shown in the Fig. 1. The height of the bearing between top and bottom steel plates are 75 mm. The five number of 5mm thick steel plates are provided in the bearings. Take the shear modulus of the rubber as  $1.06 \text{ N/mm}^2$ . [5]
4. Derive the governing equations of motion in base isolation of the building. [5]
5. Write the assumption in base isolation process of Liquid Storage Tanks and Bridges [5]
6. Write the design criteria for the RCC buildings under earthquake. Draw shear distribution diagram in 10 storey building as plan is shown in Fig. 2. The column: size 450 x 450 mm and spacing 5 m in each direction; beam: 230 x 350 mm; storey height: 3.2 m; slab thickness: 150 mm. [10]

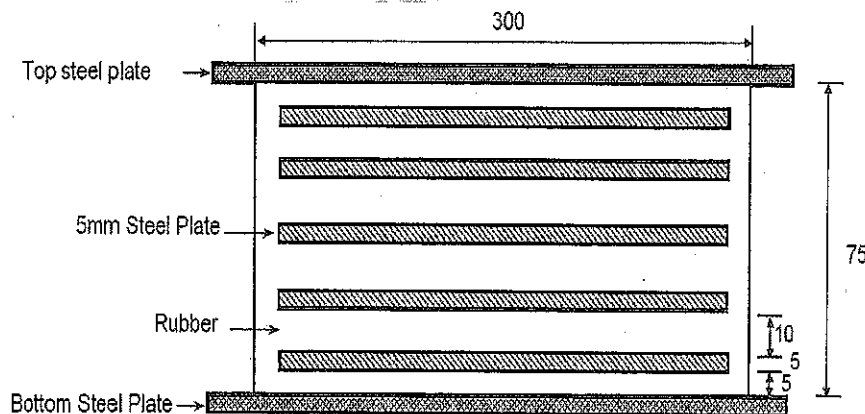


Fig. 1

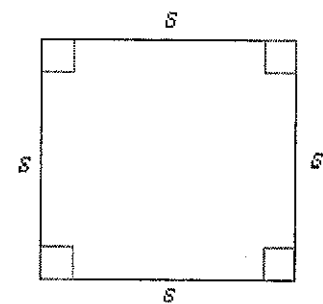


Fig. 2