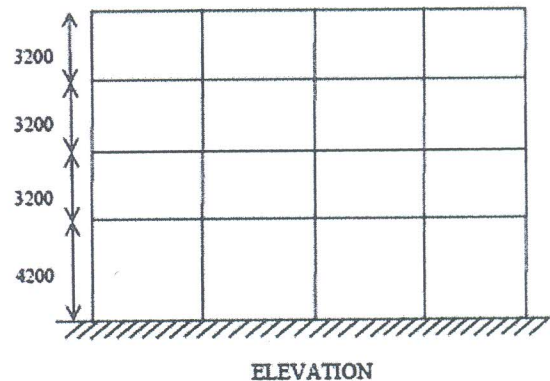
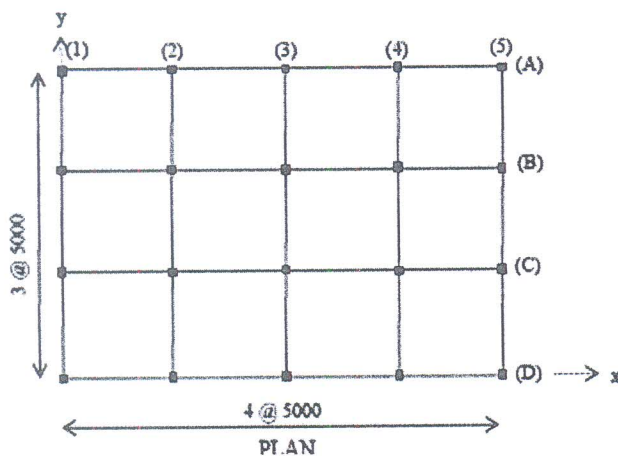


NOTE: All questions are compulsory. Write concisely. All questions carry equal marks.

1. Give recommendations for general, longitudinal and web reinforcement requirements for ductile detailing of beams. Support your answer with labeled diagrams.
2. Discuss the following aspects of earthquake resistant design and construction: (i) Lateral load resisting elements, (ii) Building configuration, (iii) Dynamic characteristics, and (iv) Quality of construction.
3. A four-storey steel office building shown in the figure below. The building is located in Shimla. The soil conditions are rocky and the entire building is supported on a raft foundation. The lumped weight due to dead loads is 12 kN/m^2 on floors and 10 kN/m^2 on the roof. The floors are to cater for a live load of 2.8 kN/m^2 on floors and 1.5 kN/m^2 on the roof. Determine design seismic load on the structure as per IS code.



(Dimensions are in mm)

4. What is special confining reinforcement in case of columns? What are the provisions of IS:13920-1993 for this type of reinforcement?
5. Draw column and its joint's ductile detailing for a typical column emphasizing longitudinal and transverse detailing of column and joint detailing.
