

M. Tech.**HIGH RISE BUILDINGS****SUBJECT CODE : CE - 519 (Elective - IV)****Paper ID : [E0857]**

[Note : Please fill subject code and paper ID on OMR]

Time : 03 Hours**Maximum Marks : 100****Instruction to Candidates:**

- 1) Attempt any **Five** questions.
- 2) **All** questions carry equal marks.
- 3) Assume missing data, if any suitably.

- Q1)** (a) Discuss Twin System of brick walls and reinforced concrete columns.
(b) On the basis of your personal experience, describe briefly an engineering project that was significantly influenced by the nature of the soil encountered at the site of the project.
- Q2)** What are different types of loads coming on high rise buildings. How are blast loads accounted for design of structures? Discuss.
- Q3)** A building frame has 4 equal bays of 5m and three storeys each having height 3.1 m. The columns of first storey are fixed at their bases. For each girder, the dead load is 25 kN/m and live load 22 kN/m. Using approximate method of analysis, determine :
- (a) the maximum girder shear.
 - (b) the maximum +ve girder moment.
 - (c) the maximum exterior column compression.
 - (d) the maximum -ve girder moment.
- Q4)** Differentiate between Ultimate Load Design and Limit State Design. How limit state of serviceability and deflection are accounted for in design.

Q5) Design a rectangular core shear wall $5\text{ m} \times 9\text{ m} \times 0.3\text{ m}$, if it is subjected to the following :

Moment in X direction 1000 kNm.

Moment in Y direction 500 kNm.

Axial Load 8000 kN.

Use M20 & Fe 500.

Q6) (a) Discuss in detail about difference between Elastic & Plastic analysis.
(b) How tall buildings are structurally different from low rise buildings.

Q7) Write short notes on :

- (a) Service systems in Tall buildings.
- (b) Stiffness and crack control.
- (c) Twist of Frame.

Q8) (a) What are shear wall buildings? Discuss shear wall-frame interaction. How is load shared by two?
(b) What are the main requirements for structural safety of masonry buildings during ground motion?

