



- Notes :
1. All questions carry equal marks.
 2. Due credit will be given to neatness and adequate dimensions.
 3. Assume suitable data wherever necessary.
 4. Illustrate your answers wherever necessary with the help of neat sketches.
 5. I.S.I. Hand Book for structural steel section, I.S. Code 8000/1962 or 1964, I.S. 456 (Revised), I.S. 875 may be consulted.
 6. Solve **any five**.

1. Design a combined footing for column C1 & C2 having sizes 600x600mm & 500x500mm respectively. The column C1 carries 800 kN axial load. C2 carries 700 kN axial load. C/C distance between C1 & C2 is 4.5m. SBC of soil is 250 kN/m². Use M25 grade concrete & Fe 500 grade steel. Sketch reinforcement details. **14**

2. Design a raft foundation for the layout of columns shown in figure 1. **14**

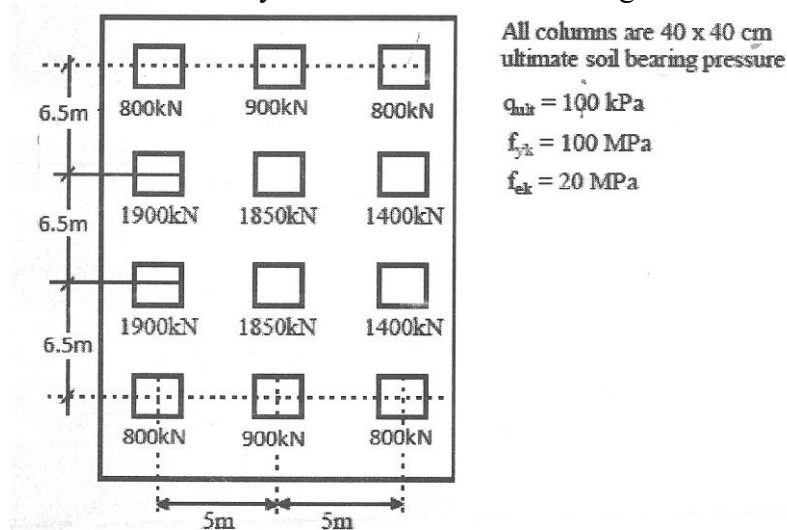


Figure 1

3. a) Explain various stages in construction of under reamed pile foundation. **7**
 b) Briefly explain design procedure of well foundation. **7**
4. Explain step by step procedure for simple machine foundation. **14**
5. a) What is a beam on elastic foundation (BOEF)? Give two practical applications. **7**
 b) i) Define the term modulus of subgrade reaction. On what factors does it depend? **7**
 ii) A plate load test yields a load-settlement curve. Determine the k-value if a pressure of 0.05 MPa causes a settlement of 2 mm.
6. A cantilever retaining wall to retain earth for a height of 4m. The backfill is horizontal. The density of soil is 19 kN/m³. SBC – 230 kN/m². Take coefficient of friction between concrete and soil as 0.6. Angle of response of earth 30° use M20 concrete. Fe500 steel. **14**
