

M.Tech. Civil Engg. (Structural Engineering & Construction) CBCS Pattern Semester-II  
**PSES23 - Design of Substructures**

P. Pages : 1

Time : Three Hours

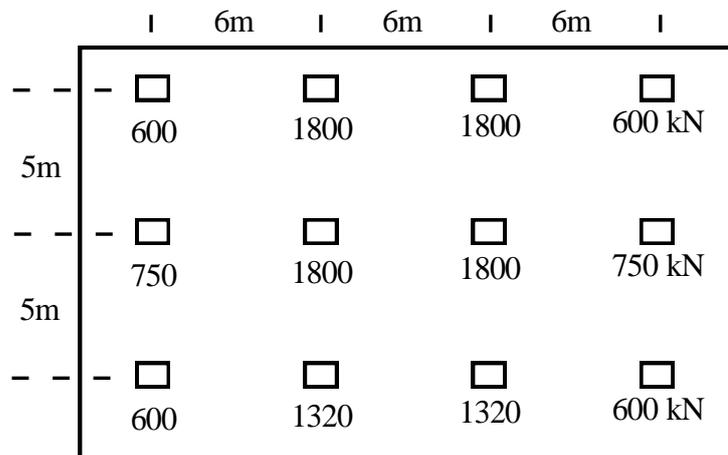


**GUG/W/23/11015**

Max. Marks : 70

- Notes :
1. All questions carry equal marks.
  2. Assume suitable data wherever necessary.
  3. Illustrate your answers wherever necessary with the help of neat sketches.

1. Design a Raft foundation for layout of column all column of equal shape 400x400mm. **35**  
 ADSP – 80 kN/m<sup>3</sup> assume 10% as load of raft and soil above



**OR**

2. a) Briefly explain design procedure of well foundation and lateral stability in well foundation. **17**
- b) Explain various stages in construction of under reamed pile foundation. **9**
- c) Briefly explain about various forces acting on tower foundation. **9**
3. Design RCC rectangular footing for two column located 3.6m apart the overall size of column are 400x400mm and 600x600 mm and load on them are 100 tonnes and 150 tone respectively width of footing is restricted to 1800mm SBC 28 tones/m<sup>2</sup> use M20 & Fe415. **35**

**OR**

4. A cantilever retaining wall to retain earth for a height of 4m. The backfill is horizontal . The density of soil is 18 kN/m<sup>3</sup>. SBC – 200 kN/m<sup>2</sup> take coefficient of friction between concrete an soil as 0.6. Angle of response of earth 30° use M20 concrete. Fe500 steel. **35**

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