

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: M.TECH.
BRANCH: CIVIL& ENV.

SEMESTER : III
SESSION : MO/19

SUBJECT: CE549 STRUCTURAL DESIGN OF FOUNDATIONS

TIME: 3 HOURS

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
-

- Q.1(a) Which type of foundation will you use for residential building when black cotton soil is present? Explain [5]
Q.1(b) Describe the steps you would take to finalize a foundation type for a given multistoried building. [5]
- Q.2(a) Describe the steps required to design a strip foundation. [3]
Q.2(b) Find the dimensions of the following pad foundation: [7]
- Total load to be resisted is $500kN$
 - Column size is $230mm \times 300mm$.
 - SBC of soil is $200 kN/m^2$.
 - Concrete grade is $M30$ and Steel grade is $FE415$
- Q.3 Explain the steps required to design a balanced foundation by giving a suitable example. [10]
- Q.4 Find the thickness of the slab for the following flat slab raft foundation: [10]
- SBC of soil is $100 kN/m^2$
 - Column Size is $300 mm \times 300 mm$
 - Column capital size is $600 mm \times 600 mm$
 - All columns carry $250 kN$.
 - 16 columns are placed in 4×4 rectangular grid fashion with 3 m spacing center to center.
- Q.5 Describe different types of piles and their corresponding advantages and disadvantages. [10]

:::::27/11/2019:::::M