

B.Tech. CIVIL ENGINEERING (BTCLEVI)

Term-End Examination

00553

June, 2018

BICEE-022 : ADVANCED DESIGN OF FOUNDATION

Time : 3 hours

Maximum Marks : 70

Note : Attempt any **seven** questions. All questions carry equal marks. Use of scientific calculator is permitted.

1. Describe the salient features and limitations of elastic continuum model of soil behaviour. 10

2. (a) Discuss the various factors which affect the contact pressure distribution beneath a raft foundation . 5

- (b) With the help of neat sketches, describe the contact pressure distribution beneath flexible footings. 5

3. Describe the different types of coffer dams and their uses. 10

4. With the help of neat sketches, discuss the various failure modes of cantilever sheet piles. 10

5. With the help of a neat sketch, discuss the various modes of vibration of a block foundation. 10
6. A 30 kN vertical compressor foundation system is operated at 40 Hz. The foundation soil is medium stiff clay having coefficient of elastic uniform compression as $40,000 \text{ kN/m}^3$. Determine the natural frequency and the magnification factor. Assume the weight of foundation to be 0.25 times the weight of the machine. The base area of foundation block is 3m^2 . Take damping factor as zero. 10
7. What design considerations are assumed in design of foundation for off-shore structures ? 10
8. What is a shell foundation ? When are shell foundations preferred ? Describe the different types of shell foundations. 10
9. Write short notes on any **two** of the following : $2 \times 5 = 10$
- (a) Dynamic Soil Constants
 - (b) Foundations for Water Tanks
 - (c) Types of Sheet Piles
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