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Roll No .....

**MVSE - 301(B)****M.E./M.Tech. III Semester**

Examination, December 2014

**Advance Foundation Engineering (Elective-I)***Time : Three Hours**Maximum Marks : 70*

**Note:** Total number of questions 10. Attempt one question (including all parts) from each unit. Assume missing data, if any suitably.

**Unit-I**

1. What are the different types of penetration tests? Under what circumstances would you recommend them?

Or

2. a) Discuss the factors which are relevant to the planning of a well balanced exploration programme.
- b) Discuss the various stages of sample disturbance.

**Unit-II**

3. Describe in details the different types of settlements which are to be considered in the design of a shallow foundation?

Or

4. Explain the method of conducting a field bearing test. Discuss the validity of the test results in the design of foundations.

**Unit-III**

5. a) List the circumstances under which a pile foundation become necessary.

- b) What are the factors to be considered in the selection of pile hammer?

Or

6. a) In a two layered cohesive soil, bored piles of 400 mm are installed. The top layer has a thickness of 5m and the bottom one is of considerable depth. The shear strength of the top clay layer is 45 kN/m<sup>2</sup> and that of the bottom is 100 kN/m<sup>2</sup>. Determine the length of the bored pile required to carry a safe load of 380 kN, allowing a factor of safety of 2.0.
- b) A 4×3 pile group has the following details; Diameter of each pile  $d = 350$  mm, Centre to center spacing of pile = 1050 mm, and capacity of a single pile = 400 kN. Determine the efficiency of the free-standing pile group.

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**Unit-IV**

7. What are the components of a cellular cofferdam? What are the desirable properties of fill in a cell?

Or

8. What are the different types of cellular cofferdams? Discuss their relative advantages and disadvantages.

**Unit-V**

9. a) What is spring mass system? How is damping represented?
- b) Briefly explain the method of analysis of a block foundation.

Or

10. Explain free and forced vibration with viscous damping.

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