

Roll No .....

## MVCT/MBCT/MVCP-103

M.E./M.Tech., I Semester

Examination, December 2013

### Advanced Geotechnical Engineering

Time : Three Hours

Maximum Marks : 70

*Note:* Attempt any five questions. Assume suitably if any data is found missing or misprint.

1. a) What are the various methods of Geophysical explorations? Explain any one method in detail.  
b) Derive an expression for vertical stresses due to concentrated load using Boussinesq explanation.
2. a) State and explain the various methods of soil sampling.  
b) Discuss various design steps of cellular coffer dam on rock.
3. a) Explain the terms Tilt and shifts in wells. What measures are adopted for rectification of tilts and shifts? Explain briefly these measures.  
b) What are the design criteria of reciprocating machine according to IS code?

(3)

4. a) Explain the following:  
i) Degree of freedom  
ii) Damping  
iii) Principal mode of vibration  
iv) Free vibration and forced vibration  
b) Give the design criteria according to IS code for Impact Type Machine.
5. a) Explain the following:  
i) Interlock Stresses ii) Cofferdams  
b) State and explain various forces acting on a well foundation.
6. a) Explain the following:  
i) Expansive Soils ii) Under-reamed piles  
b) What do you understand by collapsible soil? How construction is carried on collapsible soil?
7. a) Give a detailed classification of rocks.  
b) State and explain various physical and mechanical properties of rocks.
8. Write short notes on any four of the following:  
a) Rock mechanics  
b) Scope of rock mechanics in a civil Engineering Project.  
c) CNS Layers technique  
d) Types of machine foundation  
e) Site investigations  
f) Types of carriers.