

National Exams December 2015

04-Geol-B3, Site Investigation

3 hours duration

**NOTES:**

1. If doubt exists as to the interpretation of any question, the candidate is urged to submit with the answer paper, a clear statement of any assumptions made.
2. This is an OPEN BOOK EXAM.
3. Candidates may use any non-communicating calculator.
4. Questions have equal value. The grade for each question is given. It is suggested that the candidate proportion time based on the allocated value.
5. All questions require an answer in essay format. Clarity and organization of the written answer and any figures or sketches are important.
6. The examination has an overall value of 100 Marks: 4 questions consisting of 25 Marks each.

## Marking Scheme

1. **25 marks total**
2. **25 marks total**
  - (a) 5 marks
  - (b) 5 marks
  - (c) 5 marks
  - (d) 10 marks
3. **25 marks total**
  - (a) 10 marks
  - (b) 10 marks
  - (c) 5 marks
4. **25 marks total**
  - (a) 10 marks
  - (b) 5 marks
  - (c) 5 marks
  - (d) 5 marks

Value

25 Marks

**Question #1**

Use a flow chart in order to show the generalized considerations and specific sequences for a ground investigation. What are the important components of the entire process and how do they inter-relate? The answer should include client/contractor relations, contracts, as well as technical considerations.

25 Marks

**Question #2**

For a site investigation, comment on what to include for the following portions of the report in as much detail as you can. Also state what references to refer to or where to obtain critical information concerning these portions of the investigation.

5 Marks

a. Desk Study;

5 Marks

b. Site Reconnaissance;

5 Marks

c. Ground Investigation; and,

10 Marks

d. Selection of Exploration Methods.

25 Marks

**Question #3**

Answer the following questions as thoroughly as possible:

10 Marks

a. List and describe the advantages and disadvantages of at least 3 industry norm in-situ **soil** testing techniques;

10 Marks

b. List and describe the advantages and disadvantages of at least 3 industry norm in-situ **rock** testing techniques;

5 Marks

c. Compare the values obtained from the above-mentioned techniques to those obtained using laboratory testing (i.e. what are the advantages and disadvantages of in-situ tests to laboratory tests) in order to obtain parameters of interest during the site investigation stage of a project.

**25 Marks**      **Question #4**

Answer the following questions as thoroughly as possible:

- 10 Marks      a. What is the purpose of instrumentation for a site investigation?
- 5 Marks      b. Cite and comment on 5 common instruments (or techniques) that are used for site investigations. What are they used for, specifically, and what are they trying to obtain?
- 5 Marks      c. What are the common geotechnical mechanisms that one is interested in determining as part of a site investigation?
- 5 Marks      d. What are the primary considerations of a monitoring or instrumentation plan?

End of Examination