



PROFESSIONAL (Geodetic) EXAMINATION
Friday May 30, 2003
9:00AM

TIME ALLOWED: Four (4) hours
OF QUESTIONS: Nine (9)

INSTRUCTIONS

Note: This is a closed book examination. No aids are allowed.

1. There are nine (9) questions. Please ensure that you have a complete copy of the examination.
2. Note the number of marks for each question before compiling your answers and allocate your time accordingly.
3. Place your exam registration number at the top right-hand corner of **each page** of your answers. **DO NOT** write your name on or in the book(s).
4. Each answer must begin on a new page, however questions may be answered in any order.
5. Reference each response to its question number, including subsection.
6. Write only on the right hand side of the examination book. You may wish to use the left (unruled) side for calculations, etc., however anything written on the unruled side will not be considered during marking.
7. Do not write in pencil.
8. This examination must be returned to the invigilator with your answer book(s).

TOTAL MARKS: 100
PASS: 65%

Question 1 **(10)**

Your firm has been awarded a contract to conduct a control and pre-engineering survey for 17km of a two lane rural highway in Northeastern Ontario. As with every well-organized survey, some pre-project planning must take place.

- a) Prepare an agenda for the kick-off meeting with the client and your senior staff. (4 marks)

- b) Explain the concerns or issues that need to be addressed under each heading on the agenda (do not explain the "survey"). (6 marks)

Question 2 **(15)**

A potential client contacts you, as an OLS, requesting a proposal for geodetic survey services for a remote location in Northern Ontario.

Prepare a typical business letter to the client confirming his request.

As this letter will form the sole business agreement, be sure to address all matters pertinent to a good business contract.

NOTE: Marks will be only given for business/contract issues, so be brief in describing the actual survey work. Do not do a cost estimate, just insert a dollar figure. Do not sign the letter.

Question 3 **(16)**

Name eight sources of error in GPS observations and explain briefly how can they be accounted for? (2 marks each X 8 = 16 marks)

Question 4

(15)

The Certificate of Registration Integration Committee is currently investigating the establishment of a Peer Review Process for C of R holders.

- a) Outline why standards should be set for your discipline. (5 marks)
- b) List the framework/headings, under which standards should be developed, noting in each instance whether the standard should be a permissive or mandatory standard. (10 marks)

(Remember this is an outline and not a complete version of the standards)

Question 5

(13)

Client A retains your firm, for a fee of \$17,000, to prepare a horizontal and vertical control survey for a 100 acre farm the client proposes to develop. The client signs and returns your proposal letter together with a retainer of \$7000. You hire a sub-contractor to set the monuments and you proceed to complete the observations. The sub-contractor has completed his work and you have the observations 90% complete when the client calls and says "The proposed development is financially unviable and consequently we are canceling the project. Please stop work as we are unable to pay you any more money".

- a) What are your options and probable success at securing payment? (5 marks)

Assuming the \$7000 retainer is the only money you get:

- b) Discuss your responsibility and liability to the sub-contractor. (3 marks)
- c) Three years later a new developer, Client B, approaches you about completing the control survey on the exact same unchanged rural site. Discuss the issues of ownership of the products, including the right to use the materials to complete the work. How much will you invoice Client B? Explain your logic in arriving at this amount. (5 marks)

Question 6

(11)

What are your responsibilities and/or liabilities as an owner of a non-cadastral survey firm in the following situations?

- a) An employee is injured on the job. (3 marks)
- b) An owner of a Cadastral Survey firm offers you a commission for any work you send their way. (3 marks)
- c) A municipality contracts you to establish a network of intervisible permanent horizontal control points. They refuse to pay because several of the points are not intervisible and the vertical values you supplied are found to be unreliable. (5 marks)

Question 7

(8)

- a) Briefly explain the relationship between orthometric and ellipsoidal heights. (2 marks)
- b) In the design of vertical control networks, briefly explain why narrow loops in which the ratio of length/width is less than 4 are not acceptable. (2 marks)
- c) Explain the purpose and procedures in carrying out a Princeton Test. (2 marks)
- d) What special techniques and equipment are required for precise or high order levelling? (2 marks)

Question 8**(8)**

You were retained by a client, who happens to be the largest employer in your town, to establish survey control for a large manufacturing site. Prior to commencing work you and your staff signed a confidentiality agreement stating you will not divulge any facts about the site or the processes.

As you near completion of the \$20,000 survey, for which you have yet to be paid, you notice drums, labeled as containing hazardous material, (PCBs), leaking into a creek at the back of the property.

- a) Explain your responsibilities under statute. (4 marks)
- b) State the course of action you would follow, giving your reasons. (4 marks)

Question 9**(4)**

Section 20 of the Surveyors Act allows the Registrar to cancel a licence, Certificate of Authorization or Certificate of Registration for non-payment of any fee prescribed by the by-laws of the Association. State the requirements for the reinstatement of a licence or certificate cancelled under this section. (4 marks)