ASSOCIATION OF CANADA LANDS SURVEYORS
BOARD OF EXAMINERS

EXAMINATION P1
ACTS AND REGULATIONS RELATING TO SURVEYS OF CANADA LANDS

March 2015

Notice to Candidates:

On January 19, 2015, the National Standards for the Survey of Canada Lands replaced the General Instructions for Surveys of Canada Lands e-Edition. Questions in this examination were designed such that either set of standards may be used to answer them. Answers to questions in this examination may be based on either the National Standards or the e-Edition.

This examination consists of 10 questions on 4 pages.

Q. No	Time: 3 hours	**Marks** Value	Earned
1.	The Canada Lands Surveyors Regulations and some other federal and territorial legislation require a Canada Lands Surveyor to certify their documents and drawings. a) List three types of documents or drawing that need to be certified. b) The surveyor's statement of responsibility (certification) may be in various forms. Provide two examples of a surveyor's certification.	5	
2.	As a Canada Lands Surveyor, you have been engaged by a private developer to survey and prepare a condominium plan in Whitehorse YT, of a 20-unit condominium in two townhouse (row-housing) buildings being constructed by the developer. Each building will consist of 10 interconnected units separated by party walls. The units will not vertically overlap each other, so either bare land units or building units may be used for this development. The development includes an area between each building that is to be used for an access road, parking and a small playground. a) Describe the work that the CLS should undertake as a first step. b) Describe the pros and cons of using either bare land units or buildings units for this development. Also outline what is used to define the boundaries for bare land and building units, the measurements needed for each method, and when would be the best time to make the measurements for each method. c) The developer wants each unit to have a small front and rear yard to be the exclusive use of each unit. Describe how the boundaries of these yards can be defined. d) What areas should be set aside as common property for the condominium? Describe what would be used to define the boundaries of the common property for a bare land condominium and for a building condominium. e) The developer wants each unit to have the exclusive use of two parking stalls. Describe how the development could be designed to allow for these exclusive use parking stalls, and what, if any, extra boundaries would be needed to define them.	2 5 2 3 2	

3.	Lot 12, Group 863, Plan 43282 CLSR, 22718 LTO, was surveyed in 1944 along the MacKenzie River (navigable), in the Northwest Territories. The plan of Lot 12 shows the lot being approximately square with one boundary along the ordinary high water mark (OHWM) of the MacKenzie River, and three artificial boundaries of approximate lengths of 1000 feet with monuments placed at the two rear corners and at points on the side boundaries 50 feet from the OHWM. The plan shows a sinuous OHWM boundary with two distinct bends, and offset survey ties made to it at 100 foot intervals from a traverse running more or less parallel to the river. In June, 2014, the owner of Lot 12 has engaged you to subdivide her lot into three parcels of equal size. Your land titles search reveals that the original grant of Lot 12 made in 1945 reserved to the Crown a strip of land 100 feet in width from the OHWM (100 foot reserve). Your field survey found all monuments in good condition but discovered that the OHWM has moved inland by approximately 30 feet caused by gradual erosion of the river bank. The owner has asked you to place monuments along the upland boundary of the 100 foot reserve to define the extent of her property on the ground. a) Describe what defines the position of both the water and upland boundaries of the 100 foot reserve in 2014, and what measurement and calculations would be needed to place monuments along the upland boundary. b) Using assumed information as necessary, draw a neat sketch that would be fully sufficient for the diagram of your subdivision plan including but not limited to showing Lot 12, the original and present location of the OHWM, the three new parcels, the monuments found and placed, and a heavy or coloured line showing the lands dealt with by the plan.	6 6	
4.	Pursuant to the Canada Oil and Gas Land Regulations: a) What defines the east and west sides of a grid area? b) What defines the north and south sides of a grid area? c) What geodetic reference system (datum) is used to define a grid area? d) If there is an existing recorded legal survey of a well in a grid area what control should be used to determine the positions of new legal surveys of wells in the same grid area? e) Draw a neatly labelled sketch of grid areas $69^0$00'/$132^0$45'and $70^0$10'/$132^0$30'. Number the sections along the inside perimeter of these two grid areas.	2 2 2 4 5	
5.	As a Canada Lands Surveyor you have been engaged by the Government of the Northwest Territories to make a survey of a new 40-lot residential subdivision, 20 lots of which adjoin the rear boundary of an existing residential subdivision surveyed in 1972 and built up over the period 1973 to 1977. The lots in the earlier subdivision are fully developed with landscaping and mature trees and are all in private ownership. Describe the actions you would take after the issuance of survey instructions and prior to commencement of your field survey.	6	
6.	a) What are the four mandatory committees that must be established by the Council of the Association of Canada Lands Surveyors? b) What condition must be satisfied before a complaint respecting professional misconduct or incompetence may be referred to the Discipline Committee of the Association of Canada Lands Surveyors?	3 2	

7.	The owner of a 60 ha rural lot in Yukon has engaged you to subdivide his lot into four equal size lots. The owner's Lot 1012, Quad 105D/2, was surveyed in 1978 and granted by the crown to him in 1979. Lot 1012 is more or less rectangular in shape bounded by five sides, and is approximately 600 m wide (east/west direction) by 1000 m long (north/south direction). Both the northern and southern boundaries of the lot are defined by a single artificial boundary of 600 m length. The eastern boundary is marked by three monuments along a road R/W, and the western boundary is a straight line. The proposed subdivision sketch shows four new parcels that are about 250 m wide fronting on the road by about 600 m long to the rear of the lot. Your retracement survey finds all five CLS77 monuments marking Lot 1012 in good condition, with measurements between four of the monuments comparing reasonably well with the original survey. Whereas your measurements to the monument marking the NW corner of the Lot indicate that the monument is 1.2 m NW of the position shown on the original plan. You have verified your measurements. Most of Lot 1012 is undeveloped and is covered by a forest of pine, poplar of spruce trees. The owner has asked you to avoid cutting any of the larger trees. a) What approvals are needed to register a plan of subdivision of Lot 1012 in the Yukon Land Titles Office? b) What are the geo-referencing requirements for this subdivision survey? c) What markings would you expect to find stamped on the eight original CLS77 monuments? Would you stamp any new markings on the found monuments? What markings would you stamp on monuments placed by you. d) Describe what you would use to re-establish the boundaries of Lot 1012. What additional information would you investigate to help determine the boundaries? Provide detailed reasons to support your boundary establishment, like you would in a survey report. e) Three new interior boundaries, which run in an east/west direction, need to be surveyed to define the four new lots. Are there any survey requirements to cut and blaze these boundaries? What are the advantages and disadvantages of cutting the boundaries that you would tell the owner?	2 2 2 6 2	
8.	Explain the following annotation beside a monument shown on an official plan a) Fd. Wo. "8L12, G804, R" oblit., Tr. Pit.M. b) Res. CLS77 "8L1009, R, 2014", Mkr.	5	

9.	In 1989, Joe Jacobs used a compass and a filament measuring line to stake a group of 48 quartz mining claims in a heavily forested area near Pelly Crossing YT. He staked three rows of claims left and right of locations lines which were intended to be parallel and contiguous to each other. Each row consists of a string of 8 contiguous location lines staked in a northerly direction with eight claims of the full size left and eight claims of the full size right of the location lines. He commenced with the western row and finished with the eastern row. Jacobs recorded his claims and subsequently received grants for them and metal tags which he promptly affixed to his legal posts. Unknown to Jacobs, at the time of staking, the surface indications of mineralization he was intending to claim had a significant but irregular magnetic character which affected the consistency of his compass bearing being followed. His filament measuring device was also malfunctioning such that the actual distances between location posts were longer than that measured by him. a) What maximum distance and what direction should he have measured from the location lines in one row to commence the staking of claims along the next adjacent row of claims? b) How many legal posts did he require to establish the claim group? c) When he made application to record his claims, what acreage should he have anticipated receiving grants for? A mining company purchased Jacobs claims as some early exploration work shows some promising mineral deposits. A company geologist used a hand-held GPS device to position several of the location posts and discovered that many of the location lines were in fact irregular and exceeded the maximum length allowed. The company has engaged you, as Canada Lands Surveyor, to make a survey to verify the positon of the claims. d) Describe the actions that you would recommend to your client in order to minimize future risk in the claim group and give your reasoning? e) What options are available to you and your client to document your survey?	2 2 2 5 3	
10.	Provide answers to the following questions : a) For surveys situated in the territories, what type of monuments are normally placed? b) What are the terms shown on a plan to note that a monument has been found moved from its original position, and another monument has been placed at its re-established position? c) What type of ancillary monumentation should be placed at a monument marking the corner of a residential parcel in a subdivision? d) In what situation may only one limit of a 60 m wide road R/W be required to be monumented? e) What three methods can be used to define the boundaries of an easement that are dealt with by an Explanatory plan?	2 2 1 2 3	
	Total Marks:	100	