

**ASSOCIATION OF CANADA LANDS SURVEYORS - BOARD OF EXAMINERS  
WESTERN CANADIAN BOARD OF EXAMINERS FOR LAND SURVEYORS  
ATLANTIC PROVINCES BOARD OF EXAMINERS FOR LAND SURVEYORS**

**SCHEDULE II / ITEM 1  
GEODETIC POSITIONING**

**October 2004**

**Note: This examination consists of 4 questions on 1 page.**

<u>Q. No</u>	<u>Time: 3 hours</u>	<u>Marks</u>	
		<u>Value</u>	<u>Earned</u>
1.	The questions below are all related to GPS surveying techniques. What are the characteristics, applications and attainable accuracy of a) Dual-frequency Real-Time Kinematic (RTK)? b) Single-frequency Differential GPS (DGPS)? c) Dual-frequency Fast Static? d) Single-frequency pseudo-range point positioning? e) Dual-frequency relative positioning?	5 5 5 5 5	
2.	Four of the terrestrial coordinate systems used in geodesy are closely related. They are the Conventional Terrestrial System, the Local Astronomical System, the Local Geodetic System and the Geodetic Coordinate System. How are they defined? How are they materialized? How do they relate?	25	
3.	Answer the following questions: a) An observation was collected at 8AM on 10 February 2004 (Tuesday). What is the DOY (Day Of Year) of the observation? What is the GPS second of the same observation? b) What field procedure can be used to avoid multipath? c) What do you make of the sentence: "with today's full GPS constellation there is no need for mission planning any longer". d) Is there still a role for computations on the ellipsoid in Geodesy? Explain and give examples (if applicable). e) What is the NAD83(CSRS)? Which Provinces have adopted it as their reference frame?	5 5 5 5 5	
4.	a) One bench mark has orthometric height equal to 50.377 m. This benchmark serves as reference for a baseline determined with GPS. Geodetic heights determined from this bench mark to the point of interest are equal to 40.590 m and 47.211 m, respectively. The geoidal height difference between the bench mark and the point of interest is 0.056 m. What is the orthometric height of the point of interest?  b) A point of latitude equal to 45° is 2° in longitude away from a reference longitude. What is the approximate value of the meridian convergence at this point?	12.5  12.5	
<b>Total Marks:</b>		100	