

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

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**SCHEDULE II / ITEM 1  
GEODETTIC POSITIONING**

**September 2002**

**Note: This examination consists of 6 questions on 1 page.**

**Marks**

**Q.No**

**Time: 3 hours**

**Value   Earned**

1	(a) Define orthometric height. (b) How is gravity used to determine CGVD28 orthometric heights from leveling observations? (c) How can orthometric height be computed from ellipsoidal height?	15	
2	Describe the differences among geodetic azimuths derived from GPS observations, astronomic azimuths derived from observations to Polaris and grid azimuths derived from UTM coordinates.	15	
3	Describe the definition and realization of the following datums: (i) NAD27 (ii) NAD83 (adopted) (iii) NAD83(CSRS) (iv) WGS84	20	
4	A client has come to you for advice about collecting metre-level GIS data with GPS. The GIS map data is in NAD27 Lambert conformal map projection. How would you explain to this client the differences between datum and map projection? What process would you recommend to the client, with respect to map projection and datum, for collecting the metre-level GPS data and preparing it for use in the GIS?	20	
5	(a) Describe the basic principle of measurement used by EDMs and GPS (using the carrier phase). How is the basic principle implemented differently in long range microwave EDMs, electro-optical EDMs and GPS? (b) How does rain affect microwave EDMs, electro-optical EDMs and GPS?	15	
6	(a) Define inertial reference system and terrestrial reference system. Give an example of each reference system and when it is used. (b) How are these two reference systems related to each other?	15	
<b>Total Marks:</b>		100	0