

**CANADIAN BOARD OF EXAMINERS FOR PROFESSIONAL SURVEYORS  
ATLANTIC PROVINCES BOARD OF EXAMINERS FOR LAND SURVEYORS**

**SCHEDULE II / ITEM 2**

**October 2008**

**HYDROGRAPHIC SURVEYING AND OCEANOGRAPHY**

**Note:** This examination consists of 5 questions on 1 page.

**Marks**

**Q. No**

Time: 3 hours

Value Earned

1	Define in detail the following terms: a) Shoal examination b) Tidal range c) Cleared depth d) Continental Margin e) Thermocline f) Keel (of a vessel) g) Territorial Sea h) Reverberation (as it applies to underwater acoustics) i) Piezoelectric transducer j) Compass rose k) Benthos l) Groin (or groyne) m) Berth n) Isogonic line o) Cavitation p) Chart datum q) Shipping lane r) Quay s) Seiche t) Limnology	40	
2	a) Describe with the aid of diagrams two different ways of calibrating a single beam echo sounder. b) Describe the major sources of errors to be considered when obtaining a depth by single-beam echo sounder.	5 5	
3	With the aid of diagrams/sketches describe thoroughly the tidal effects caused by the sun-moon-earth interaction (in your presentation please explain the significance of the terms perigee, apogee, perihelion and aphelion).	10	
4	a) Tidal data analysis involves both harmonic and non-harmonic constituents. Explain each. b) What is a co-tidal chart and why would you require one when conducting hydrographic surveys?	5 5	
5	Explain why a hydrographic surveyor would: a) Use a lead line to obtain a water depth rather than use an echo sounder. b) Use a 30 KHz echo sounder rather than a 200 KHz echo sounder. c) Produce a navigational chart at a scale of 1:60,000 rather than produce a chart of the same area at a larger scale of 1:20,000. d) Use a sounding pole rather than either a lead line or echo sounder to perform sounding operations. e) Use horizontal sextant angles to position a vessel rather than using GPS/DGPS f) Use a portable echo sounder with the transducer mounted over the side of the vessel rather than a vessel equipped with an echo sounder and a hull mounted transducer.	5 5 5 5 5 5	
	<b>Total Marks:</b>	<b>100</b>	