

CANADIAN BOARD OF EXAMINERS FOR PROFESSIONAL SURVEYORS

SCHEDULE II / ITEM 2

HYDROGRAPHIC SURVEYING AND OCEANOGRAPHY

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

March 2010

Note: The use of calculators or similar devices is not permitted in this exam.

Q. No	Time: 3 Hours	Value	Earned
1.	Define in detail the following terms: (2 points each) a) Shoal examination b) Tidal range c) Cleared depth d) Thermocline e) Territorial Sea f) Reverberation (as it applies to underwater acoustics) g) Compass rose h) Cavitation i) Chart datum j) Seiche	20	
2.	a) With the aid of diagrams/sketches describe thoroughly the tidal effects caused by the sun-moon-earth interaction. b) Why is the tidal range in the Bay of Fundy much larger than in the mid-Atlantic? c) Tidal data analysis involves both harmonic and non-harmonic constituents. Explain each.	20 5 5	
3.	Name and describe the major sources of errors to be taken into consideration when obtaining a depth by single-beam echo sounder. How do you compensate for each error?	10	
4.	What are the advantages and disadvantages of using a multibeam echo sounding system rather than a single-beam echo sounder?	10	
5.	a) Describe the factors that affect the speed of sound of an underwater acoustic wave. b) Why is it critical that a hydrographic surveyor know the speed of sound in water?	5 5	
6.	A detailed large scale hydrographic survey is required for the construction of a pier to be used mainly for loading/offloading container vessels and bulk carriers. The area of coverage is rectangular in shape, approximately 1500 m x 1000 m. Your company is going to submit a proposal (bid) to conduct the survey and you are part of a team preparing the submission. Compile a list of questions/issues that you would address in order to prepare the documentation.	20	
Total Marks		100	