

CANADIAN BOARD OF EXAMINERS FOR PROFESSIONAL SURVEYORS

E-2 HYDROGRAPHIC SURVEYING

October 2010

Note: This examination consists of 9 questions on 1 page.

Marks

Q. No

Time: 3 hours

Value Earned

1.	Define the following in one or two sentences: a) Thermocline b) Transducer c) Side Scan Sonar d) Heave e) LIDAR f) Seiche g) DGPS h) Chart Datum i) Navigation Aid j) IHO S-44	2 2 2 2 2 2 2 2 2 2	
2.	Name the three properties of sea water that affect the speed of sound through the ocean. What are their units and typical ranges? What is the typical range of sound velocity in ocean water?	10	
3.	With the help of a diagram, describe the components necessary for reducing water depth measurements from a singlebeam transducer face to a chart datum.	5	
4.	In relation to Multibeam surveying, what is a “patch test” and why is it performed? Which four components is it designed to address?	10	
5.	Explain the principles, and limitations of laser bathymetry.	5	
6.	Describe tide generating forces and the static and dynamic tidal theories.	10	
7.	Describe four different horizontal positioning systems/methods used in hydrography. Include: positioning type, observables, measurement instrumentation, sources of uncertainty, expected uncertainty.	10	
8.	With the help of a diagram, describe the various vertical datums used in hydrographic operations. Explain what each datum is used for and how it is related to the others.	10	
9.	Describe the purposes of nautical charting surveys including all essential data to ensure safety of navigation. Describe everything you would take into account in order to plan and conduct a hydrographic survey for charting.	20	
Total Marks:		100	