

CANADIAN BOARD OF EXAMINERS FOR PROFESSIONAL SURVEYORS

C12 - HYDROGRAPHIC SURVEYING		<u>March 2022</u>	
Note: This examination consists of 12 questions on 1 page.		Marks	
<u>Q. No</u>	<u>Time: 3 hours</u>	<u>Value</u>	<u>Earned</u>
1.	Describe Snell’s Law and how it is used in acoustic ray tracing.	10	
2.	Describe three sources of vertical uncertainty in a singlebeam depth measurement.	10	
3.	Specific to hydrographic applications, describe the difference between Multibeam Sonars and Side Scan Sonars. Include a discussion of what each would be used for and why.	10	
4.	How does the beamwidth affect the beam's footprint size?	5	
5.	What is the relationship between transducer size and its beamwidth?	5	
6.	With the use of diagrams, describe the four main errors that a “patch test” is designed to address. Make sure you include where, how and why the patch test lines are run.	10	
7.	What is a cross check line and what is it used for?	5	
8.	What are tide tables and what are they used for?	5	
9.	What is the vertical datum used on nautical charts and how does it differ from a geodetic vertical datum?	5	
10.	What method of elevation measurement would be most appropriate for determining the height difference between a reference benchmark and a water level gauge. Why?	5	
11.	Describe the checks, verifications and calibrations and other quality control procedures you would typically carry out prior to, during, and after survey.	10	
12.	You are tasked to conduct dredging surveys to determine volume removed and to ensure minimum depths met. Describe how you would conduct these operations, what equipment you would use, what datums and what specifications you would try to meet.	20	
		100	