

CANADIAN BOARD OF EXAMINERS FOR PROFESSIONAL SURVEYORS

C12 - HYDROGRAPHIC SURVEYING		October 2020	
Note: This examination consists of 13 questions on 1 page.		Marks	
<u>Q. No</u>	<u>Time: 3 hours</u>	<u>Value</u>	<u>Earned</u>
1.	Please define the following in one or two sentences		
	a) Spring Tide	2	
	b) HAT	2	
	c) Semi-Diurnal tidal tide	2	
	d) CTD	2	
	e) Bandwidth	2	
	f) CHIRP	2	
	g) Heave	2	
	h) Harmonic Mean Sound Speed	2	
	i) Continuous Wave Pulse	2	
	j) Phase Differencing Multibeam	2	
2.	Name the three ocean parameters that effect sound velocity in the ocean.	5	
3.	What factors affect the vertical resolution of a singlebeam echo sounder?	5	
4.	Describe two methods for measuring sound velocity.	10	
5.	What is a side or bow mounted transducer and what advantages does it have over a hull mounted transducer?	5	
6.	What is acoustic ray tracing?	5	
7.	What is a chart datum and what is it used for?	5	
8.	Using a diagram, show how a single beam transducer's beamwidth affects the soundings horizontal uncertainty.	5	
9.	What are crosscheck lines and what are they used for?	5	
10.	Describe the basic principles of MBES transmit and receive beam forming and steering using flat transducers.	10	
11.	Name three vessel motion components that affect the horizontal uncertainty of a multibeam sounding.	5	
12.	With the help of a diagram describe the relationship between ellipsoidal and geoidal heights.	10	
13.	What is IHO S-44 and what is it used for?	10	
		100	