

CANADIAN BOARD OF EXAMINERS FOR PROFESSIONAL SURVEYORS

C12 - HYDROGRAPHIC SURVEYING		Oct-15	
Note: This examination consists of 9 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) Thermocline	2	
	b) Sieche	2	
	c) Shoal Exam	2	
	d) Lead Line	2	
	e) LAT	2	
	f) Beam Width	2	
	g) Bandwidth	2	
	h) Cross-check line	2	
	i) Chart Datum	2	
	j) CTD	2	
2.	With the aid of diagrams/sketches describe thoroughly the tidal effects caused by the Sun-Moon-Earth interaction.	7	
	Why is the tidal range in the Bay of Fundy much larger than in the mid-Atlantic?	3	
3.	Describe the factors that affect the speed of an underwater acoustic wave.	7	
	Why is it critical that a hydrographic surveyor know the speed of sound in water?	3	
4.	With the use of diagrams, describe the four main errors that a multibeam “patch test” is designed to address. Make sure you include where, how and why the patch test lines are run.	10	
5.	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	
6.	How can SSS imagery be used to estimate the height of an object on the sea bed? What assumption must be made in order for this method to work properly?	10	
7.	Summarize the differences between beam forming and phase differencing multibeam systems.	10	
8.	Why is it necessary to apply motion corrections (pitch and roll) to narrow angle, single beam observations and not to wide angle, single beam observations? Use a diagram to illustrate your answer.	10	
9.	Compare and contrast the use of multi-beam versus airborne bathymetric LIDAR in hydrography. Include descriptions of when, where and why LiDAR is more suitable than the MB and vice versa.	10	
		100	0
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