

CANADIAN BOARD OF EXAMINERS FOR PROFESSIONAL SURVEYORS

| C12 - HYDROGRAPHIC SURVEYING | | <u>March 2021</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. | Why is it critical that a hydrographic surveyor know the speed of sound in water? | 5 | |
| 2. | Draw two typical sound speed profiles in the open ocean, one at the equator and one in the arctic. | 10 | |
| 3. | Describe with the aid of a diagram how a target height is estimated from a side scan sonar image. | 10 | |
| 4. | What factors affect the vertical resolution of a singlebeam echo sounder? | 5 | |
| 5. | What is the relationship between transducer size and its beamwidth? | 5 | |
| 6. | Describe a bar check procedure for single beam operations. Make sure you include a discussion on why and when this procedure is performed. | 10 | |
| 7. | 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 | |
| 8. | With the help of diagrams, describe the tide generating forces. | 10 | |
| 9. | Compare and contrast singlebeam, multibeam and sidescan sonar systems. | 10 | |
| 10. | When should quality control begin for a hydrographic survey? | 5 | |
| 11. | What is an ENC and how is it derived from hydrographic information? | 10 | |
| 12. | What IHO S-44 specification would you recommend for a harbour survey? Why? | 10 | |
| | | 100 | |