

**National Marine Manufacturers Association**  
**Product Compliance Specialist Examination**  
**Cockpit Drainage Systems (7/08)**

1. Of the four choices listed below, which is the smallest allowed square shaped freeing port?
  - a. 0.785 inch by 0.785 inch
  - b. 0.8 inch by 0.8 inch
  - c. 0.9 inch by 0.9 inch
  - d. 1 inch by 1 inch
  
2. Cockpit drain fittings on assisted bailing cockpits must be installed such that
  - a. The cockpit retains 90% of the water.
  - b. The cockpit will drain 90% of the water at 7° heel angle.
  - c. The cockpit will drain 90% of the water at 10° heel angle.
  - d. The cockpit will drain 10% of the water at 90° angle.
  
3. Cockpits drained by operator intervention only
  - a. Must be weather tight
  - b. Must be water tight
  - c. Must have a means to determine water level in the cavity
  - d. Should have sufficient flotation to support the boat in the flooded condition
  
4. The sole height for a quick draining cockpit on a 20 ft boat must not be less than
  - a. 3.9 inches
  - b. 4.4 inches
  - c. 4.9 inches
  - d. 5.2 inches
  
5. An outboard powered boat
  - a. Must have an engine well that is self draining if equipped with a quick draining cockpit
  - b. Must have a cockpit sole that is at least weather tight
  - c. Must be water tight to the height of the sheer at the transom corners
  - d. Must be 12 inches above the cockpit sole
  
6. If a boat has a self bailing cockpit
  - a. It must have a watertight cockpit
  - b. It must have a watertight bow cockpit
  - c. The cockpit sole must be 1 inch above the static waterline
  - d. The cockpit sole must be 1 inch above the full load waterline

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7. The flow reduction for a 1 ½ inch cockpit drain with a screen and 45 degree elbow is
- a. 40%
  - b. 35%
  - c. 25%
  - d. 15%
8. When assessing the quick draining cockpit of a boat on dry land
- a. The cockpit must be parallel to the test sight
  - b. Salt water should be used for the test if the boat is to operate in the ocean
  - c. 90% of the test water must have drained after 75 seconds
  - d. The testing time cannot exceed 90 seconds
9. When assessing a quick draining cockpit of a boat in the water
- a. The boat must be not be restrained
  - b. The pitch of the boat must be restrained
  - c. The heel must be restrained to no more than 2 degrees
  - d. None of the above
10. When using the calculation method to determine drain size
- a. The hull volume below the static waterline must be calculated
  - b. The hull volume must be divided by the cockpit volume
  - c. The cockpit depth must be determined
  - d. Freeboard at the stern must be measured
11. If a boat has a cockpit volume of 200 cubic feet and a hull volume of 1000 cubic feet what is the time to drain value?
- a. 0.2
  - b. 5.0
  - c. 120
  - d. 240

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12. After calculating the required drain size, the value expressed is
- a. Inches
  - b. Square inches
  - c. Feet
  - d. A dimensionless number
13. If the boat has a cockpit volume of 120 cubic feet and a time to drain of 240 seconds, what is its calculated flow rate?
- a. 2 ft<sup>3</sup>/min
  - b. 20 ft<sup>3</sup>/min
  - c. 22.5 ft<sup>3</sup>/min
  - d. 30 ft<sup>3</sup>/min
13. If the calculated drain area is 1.5 square inches, how many <sup>3</sup>/<sub>4</sub> inch drains are required?
- a. 2
  - b. 4
  - c. 6
  - d. None of the above
15. What is the required drain area if a boat has a 100 ft<sup>3</sup> cockpit with a 75% time to drain of 90 seconds?
- a. 21 in<sup>2</sup>
  - b. 18 in<sup>2</sup>
  - c. 15 in<sup>2</sup>
  - d. 12 in<sup>2</sup>
16. How many 2 inch round drains does it take to satisfy the requirement in question #16?
- a. 4
  - b. 5
  - c. 6
  - d. 7
17. The maximum heeled waterline is
- a. The point where water enters the vessel
  - b. An angle of 7° for powerboats
  - c. An angle of 7° for sailboats
  - d. The sheer at amidships on powerboats

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18. The term  $h_c$  is
- a. The height of the waterline above the cockpit sole
  - b. The cockpit depth
  - c. A dimensionless number
  - d. Expressed in inches or mm
19. Self bailing cockpits must have
- a. Water tight bow cockpits
  - b. Seacocks on drains that are below waterline
  - c. Electric pumps for bailing
  - d. Cockpit soles less than 1 inch above the waterline
20. What types of cockpits are not allowed on boats over 20 feet?
- a. Assisted bailing
  - b. Non-draining
  - c. Self bailing
  - d. Quick draining