National Marine Manufacturers Association
Product Compliance Specialist Examination
Cathodic Protection (2022 MY)
ABYC E-2 (7/19)

1. Corrosion is:
    a. Always galvanic
    b. Sometimes correctly called electrolysis
    c. Always controlled by using sacrificial anodes.
    d. The deterioration of or loss of metal mass by physical, chemical, or electrochemical reactions

2. An Anode is an electrode:
    a. Of a galvanic cell which has a more positive corrosion potential than another electrode of the cell.
    b. Of a simple electrochemical cell at which metal ions pass into the electrolyte and the metal wastes away.
    c. Of a supplied-current cell which is connected to the negative terminal of a DC current source.
    d. Made of a more noble material than another electrode.

3. Cathodic refers to:
    a. Corrosion of certain metals (such as aluminum) caused by excessive cathodic protection.
    b. The less noble metal
    c. Bonding to the engine positive terminal
    d. Protection is prevention of corrosion of an immersed metal by making it an anode of an impressed current electrochemical cell.

4. Cathodic bonding system conductors shall:
    a. Be copper braid or copper tubing
    b. Be green or green with yellow stripe insulated stranded copper at least 10 gauge.
    c. Be oil resistant, insulated, tinned stranded copper wire or uninsulated copper strip.
    d. Connect a metal hull directly to the engine positive terminal and the connection shall be above the normal accumulation of bilge water.

5. A cathodic protection system:
    a. Hull mounted metallic trim tabs may be isolated from the protective system.
    b. Is required by ABYC standards and is required on all NMMA Certified boats.
    c. Shall involve a negative shift of 2.5 volts relative to the least noble metal being protected.
    d. Propeller shafts must be included as a part of the protective system.

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6. The ABYC Standard E-2, Cathodic Protection applies to the design, installation, and use of cathodic protection systems on:
    a. All boats
    b. Boats used in salt water
    c. Boats with DC electrical systems.
    d. Boats with sacrificial anodes or impressed currents

7. Which of the following statements is true regarding sacrificial anode installation:
    a. Anodes may be placed directly forward of water intakes.
    b. Anodes can be used to mark the proper placement of lifting slings.
    c. Cathodic system anodes must have a maximum resistance of 100 ohms to the metal being protected.
    d. Anodes must be located so as not to disturb water flow past the props or jet drive intake.

8. If installed, the mass and exposed area of the sacrificial anodes shall be of the proper type. Which statement is true?
    a. Any anode material can relate to other anodes and then connected to the bonding system.
    b. Anodes for use in salt water can be Al or Zn but not Mg.
    c. Inspection of the anodes is generally done every 2 years.
    d. Mg anodes are only to be used in brackish water.

9. If installed, impressed current cathodic protection system shall be in accordance with which of the following statements?
    a. The system shall have means to provide indication of over protection or under protection.
    b. The cathodic protection controller must not vary the current to the reference electrode if the lead is shorted to ground or broken.
    c. Anodes must be connected directly to a metal hull.
    d. Anodes must be marked with the words “Painting Prohibited.”

10. Which of the following statements is true about metal hulls?
    a. The recommended range of cathodic protection for steel or aluminum hulls is negative 550 to negative 700 mv.
    b. Fasteners used for connections to aluminum hulls shall be 300 stainless steel.
    c. A hull potential monitor should be permanently installed on all boats.
    d. Bronze or other metal alloy underwater fittings may be fastened directly to aluminum or steel hulls.