National Marine Manufacturers Association

Product Compliance Specialist Examination
Battery Installation (12/07)

1. Which of the following is a true statement?

   a. Multiple battery installations must comply with the 12 inch envelope for dielectric shielding when required.
   b. Multiple battery installations must comply with the 15 inch envelope for dielectric shielding when required.
   c. Single battery installations must comply with the 18 inch envelope for dielectric shielding when required.
   d. Single battery installations may not comply with the 12 inch envelope for dielectric shielding when required.

2. Batteries shall be designed to:

   a. With a "P", "Pos", or "+" on or near the ungrounded (positive) terminal.
   b. To have access to each cell.
   c. With the negative terminal marked "N", "Neg", or "-".
   d. To provide easy addition of terminals.

3. Batteries shall be installed to meet the following requirement(s):

   a. Batteries must be installed so that they will not move more than 1"
   b. Not be installed directly below a fuel system component
   c. Have protection so that metallic items cannot contact the ungrounded terminal
   d. All of the above

4. The selection of the rated reserve capacity of a battery is determined by calculation. This calculation considers which of the following:

   a. Cranking Motor Loads
   b. DC loads that must be available on a continuous duty basis
   c. AC Load requirements
   d. Battery type

National Marine Manufacturers Association
Product Compliance Specialist Examination
Battery Installation (12/07)

5. Because all battery installations shall be secured against shifting, the following tests should be conducted by the boat manufacturer for all representative installations. Each installed battery should not move more than one inch in any direction when a pulling force of 90 pounds or twice the battery weight (whichever is less) is applied through the center of gravity of the battery for a duration of one minute each as follows:

    a. Vertically and Parallel to the boats centerline (vertically) both fore and aft. Perpendicular to the boats centerline (lateral) both port and starboard.
    b. Vertically and Parallel to the boats centerline (horizontally) both fore and aft. Perpendicular to the boats centerline (vertically) both port and starboard.
    c. Vertically and Parallel to the boats centerline (vertically) both fore and aft. Perpendicular to the boats centerline (horizontally) both port and starboard.
    d. Vertically and Parallel to the boats centerline (horizontally) both fore and aft. Perpendicular to the boats centerline (horizontally) both port and starboard.

6. Each battery shall be protected to prevent metallic objects from contacting the positive terminal by:

    a. Putting the battery in a covered box.
    b. Covering the positive terminal with a suitable terminal boot.
    c. Locating the battery in a compartment designed for the batteries only.
    d. Any or all of the above

7. Batteries with top or side mounted terminals shall have

    a. a provision to contain leakage
    b. protection on the ungrounded terminal
    c. no metallic fuel system components within the 12” umbrella unless shielded
    d. all of the above

8. Which of the following are suitable for providing dielectric shielding?

    a. A battery box cover.
    b. Any durable nonconductive material.
    c. Terminal boots over the battery posts.
    d. Stainless steel mesh.

National Marine Manufacturers Association

Product Compliance Specialist Examination
Battery Installation (12/07)

9. Each battery shall not be installed without an intervening sole, floor or deck:

    a. Directly above or below a fuel tank.
    b. Directly below or above a fuel fitting in a fuel line.
    c. Directly above or below a fuel filter.
    d. Any or all of the above.

10. A battery bank of 2 or more batteries may be used to provide more capacity or a higher voltage by:

    a. Connecting the batteries on series for higher voltage.
    b. Isolating the batteries.
    c. Connecting the batteries in parallel for higher capacity.
    d. Both a and c are correct.

11. Which of the following provides the best choice for a good battery installation?

    a. Hold down straps.
    b. A vented battery box that is well secured against shifting.
    c. A battery tray with straps, and fasteners in the bottom of the tray.
    d. Automotive type “Jay” hooks.

12. Any battery enclosure such as a battery box or cover should be vented to prevent build-up of hydrogen gas because:

    a. Hydrogen gas could explode.
    b. Hydrogen gas is an inert substance.
    c. Hydrogen gas turns to water when cooled.
    d. Hydrogen gas could damage electrical equipment.

13. A fuel filter is installed below the top surface of a battery, and 14 inches away from it. This installation may be considered okay because:

    a. The filter is within the required dielectric envelope.
    b. The filter is installed above the dielectric envelope.
    c. The filter is installed outside of the dielectric envelope.
    d. This installation does not meet the requirements of dielectric shielding.

National Marine Manufacturers Association
Product Compliance Specialist Examination
Battery Installation (12/07)

14. Fasteners used to hold down a battery tray or box should be external to the inside of the tray or box because:

    a. They may damage the battery case.
    b. They will cause the battery to "ride" on the fasteners, and will not allow for a successful "pull test".
    c. Spilled electrolyte must be kept away from the fastners.
    d. There are no holes supplied within the box.

15. Spring clips or temporary clamps:

    a. May not be used for connecting battery terminals.
    b. May be used when connecting battery terminals.
    c. May be used if the diameter of the clamp is greater than 1.5 times the diameter of the conductor being used.
    d. May be used for connecting a battery charger.

16. A fuel line shut-off valve fitting is installed in a compartment containing a battery. This fitting must:

    a. Not be installed directly above or below the battery regardless of dielectric shielding requirements.
    b. Not be installed directly above or below the battery unless dielectric shielding is installed.
    c. Be installed directly above or below the battery without dielectric shielding.
    d. Be installed directly below the battery and outside of the dielectric shielding envelope.

17. The reason that terminal boots and battery box covers are not suitable for dielectric shielding protection is because:

    a. They do not provide sufficient shielding.
    b. They are prone to damage.
    c. They are removed during servicing.
    d. They are not made of suitable dielectric shielding materials.

National Marine Manufacturers Association
Product Compliance Specialist Examination
Battery Installation (12/07)

18. The length of the soldered joint of a soldered battery terminal conductor connection should be:

    a. 1.5 times the diameter of the insulated conductor.
    b. 1.5 times the diameter of the stranded copper portion of the conductor.
    c. 2 times the length of the terminal connector.
    d. 2 times the diameter of the unstranded portion of the conductor.

19. According to ABYC E – 10, the largest conductor that can be attached to a battery using a wing nut is

    a. 6 gauge
    b. 4 gauge
    c. 8 gauge
    d. 10 gauge

20. Batteries shall be charged by:

    a. A means that is appropriate to the type of battery.
    b. A self limiting charger only.
    c. An alternator only.
    d. Only a non-self limiting charger that is properly installed.

21. When installing multiple sized ring terminals on a battery stud, the installer should:

    a. Arrange the largest ring terminal closest to the battery.
    b. Attach the ring terminals with lock nuts or nut and lock washer if any conductor is larger than 8 gauge
    c. Use a flat washer next to the lock washer only
    d. All of the above.

National Marine Manufacturers Association
Product Compliance Specialist Examination
Battery Installation (12/07)

22. When more than 4 ring terminals need to be attached to the positive battery stud the installer should:

    a. Fan the terminals out to provide more room for connections.
    b. Install a jumper to a separate terminal strip or stud and limit the number of ring terminals at the battery stud to 4.
    c. Attach some of the ring terminals to the grounded stud.
    d. Leave off the smallest ring terminal to keep the number of ring terminals attached to 4.

23. Batteries can be installed directly above a fuel tank or below a battery charger if:
    a. There is an intervening sole, floor or deck between
    b. There is a manual battery switch installed
    c. There is adequate ventilation provide
    d. None of the above.

24. Batteries can be installed on an aluminum deck if:

    a. They are contained in a proper battery box which is properly secured.
    b. They are secured to the deck.
    c. They are only properly ventilated.
    d. They are contained in a battery box which is secured to the deck with screws through the bottom of the box.

25. The following definition is correct according to ABYC:

    a. Cold Cranking Amps are considered at 0 degrees F.
    b. Marine Cranking Amps are the proper battery rating for boats.
    c. Battery Bank is used to identify the best source to purchase batteries
    d. Battery Reserve Capacity identifies the charging rate for batteries