

MES 2008 Errata – Instructor Manual

19 April 2009

Replace referenced paragraphs, figures, and homework questions with the following. Changes to text are underlined for clarity.

Chapter 1

Homework Question #3

3. Which material is NOT a good insulator?
- Glass
 - b. Plastic
 - Rubber
 - d. Gold**

Chapter 1

Homework Question #4

4. In a series circuit:
- a. the same current always flows through each device.**
 - the same voltage is always across each device.
 - if one light is burned out the other lights remain on.
 - the electricity flows through multiple paths.

Chapter 1

Homework Question #5

5. In a parallel circuit:
- the same current always flows through each device.
 - b. the same voltage is always across each device.**
 - if one light fails, the other lights will fail.
 - the electricity flows through a single path.

Chapter 1

Homework Question #11

Ref. paragraphs 22 and 23. Figure 1-9.

Chapter 1

Homework Question #11

Ref. paragraphs 43 and 47. Figures 1-11 and 1-12.

Chapter 1
Homework Question #12

12. When measuring current, the multimeter is placed:

Chapter 1
Homework Question #18

18. The electrical measurement unit of the rate of doing work is:

Chapter 1
Homework Question #19

19. An electric current flowing through a conductor produces:

Chapter 2
Slide 11, Notes

Note the application of Ohm's Law. $P = I \times E = I \times (I \times R) = I^2 \times R$. As resistance drops, the current goes up as the square – ½ resistance results in 4x current, which leads to heating.

Chapter 2
Homework Question #12

12. Stranded copper conductors provide for:
- higher current flow in smaller wires.
 - better insulation.
 - resistance to failure due to vibration.**
 - better electrical connection to screws and studs.
-

Chapter 2
Homework Question #13

13. Crimp-type wire terminal lugs should be:
- full circle or captive spade type.**
 - U-shaped (plain spade) for easy removal.
 - avoided because of cost and high resistance.
 - crimped firmly with pliers.
-

Chapter 2
Homework Question #19

19. GFCI outlets trip at:

- a. **5 mA.**
- b. 10 mA.
- c. 15 mA.
- d. 20 mA.

Chapter 3
Page 50, Slides 29-33

- A. Charging a battery requires more charge (ampere hours) than removed during its use
- a. Flooded cells require 115% to 120%
 - b. Gel cells require 105% to 114%

Chapter 3
Homework Question #14

Ref. paragraph 53.

Chapter 3
Homework Question #15

15. Flooded-cell batteries require charging current to:
- a. equal 100% of charge removed from battery.
 - b. equal 105 to 115% of charge removed from battery.
 - c. **equal 115 to 120% of charge removed from battery.**
 - d. equal 120 to 140% of charge removed from battery.
- Ref. paragraph 65.

Chapter 3
Homework Question #21

21. The maximum lead-acid chemistry charge rate in amperes should not exceed _____ percent of the rated ampere-hour capacity.
- a. 10
 - b. **20-40**
 - c. 40-50
 - d. 60

Chapter 3
Homework Question #24

Ref. paragraph 4.

Chapter 4

Homework Question #1

1. Nominal voltage for AC in the United States is:
 - a. 100 volts
 - b. 105 volts
 - c. **120 volts**
 - d. 130 volts
-

Chapter 4

Homework Question #4

4. Service cord ratings are based on _____ feet length of cable.
 - a. 25
 - b. **50**
 - c. 75
 - d. 100
-

Chapter 4

Homework Question #10

10. A high-quality inverter provides 60 Hz _____ AC power.
 - a. square wave
 - b. modified sine wave
 - c. **true sine wave**
 - d. discrete cosine transformation
-

Chapter 4

Homework Question #18

18. The galvanic isolator should be installed in _____ wire.
 - a. **series with the green ground**
 - b. parallel with the green ground
 - c. series with the white neutral
 - d. parallel with the while neutral
-

Chapter 5

Homework Question #1

1. For significant galvanic corrosion to take place the two metal electrodes must:
 - a. be identical.
 - b. be close together on the galvanic scale.
 - c. **be far apart on the galvanic scale.**
 - d. be of different polarities on the galvanic scale.
-

Chapter 5

Homework Question #3

3. The first sign of galvanic corrosion is _____ the waterline.
- blistered paint on metal above
 - blistered paint on metal below**
 - a powdery substance on metal above
 - a powdery substance on metal below
-

Chapter 5

Homework Question #4

4. Which is a self-destructing metal in sea water?
- Bronze
 - Monel
 - Brass**
 - Iron
-

Chapter 5

Homework Question #8

8. Stray current corrosion is normally caused by:
- stray AC current between black and green wires.
 - stray DC current from the boat's bonding system.
 - stray AC current from a source external to the boat.
 - stray current either from the boat's DC battery or from an external source of DC.**
-

Chapter 5

Homework Question #9

9. DC stray current corrodes which electrode?
- The more passive or noble one.
 - The more active or less noble one.
 - The one that current flows from.**
 - The one that current flows to.
-

Homework Question #12

12. The corrosion of aluminum castings for outboards and outdrives can be prevented by:
- installing sacrificial anodes below the waterline.**
 - painting the aluminum with copper-based paint.
 - connecting the shoreside AC green wire to the DC ground.
 - doing nothing since they will not corrode.
-

Chapter 5
Homework Question #13

13. Corrosion due to stray current flow in wiring systems can be eliminated or reduced by:

Chapter 5
Homework Question #14

14. With stray current flow of alternating current:
- only the base metals will be corroded.
 - only noble metals will be corroded.
 - any metal carrying current will be corroded.**
 - no corrosion will take place.
-

Chapter 6
Homework Question #5

5. Wire size of the discharge conductor should be:
- #4 AWG stranded.**
 - #4 AWG solid.
 - #6 AWG stranded.
 - #6 AWG solid.
-

Chapter 6
Homework Question #6

6. The lightning protection system for a power boat normally uses a:
- fiberglass antenna grounded to the engine block(s).
 - fiberglass antenna connected to a water terminal.
 - metal whip antenna grounded to the engine block(s).
 - metal whip antenna connected to a water terminal.**
-

Chapter 6
Homework Question #7

7. The lightning protection system for a sailboat normally uses the:
- VHF antenna grounded to the engine block.
 - VHF antenna connected to the keel.
 - mast grounded to the engine block.
 - mast connected to the keel.**
-

Chapter 6

Homework Question #8

8. Precautions for personnel during a lightning storm include:
- remaining inside the boat and avoiding unnecessary contact with metal surfaces.**
 - getting in the water and holding onto any metal surface.
 - staying out of the water and holding onto any metal surface.
 - remaining inside the boat and holding onto any metal surface.
-

Chapter 7

Homework Question #1

1. The disadvantage of an analog multimeter, compared to a digital multimeter, is:
- high cost.
 - a difficult to read measured value.**
 - larger size and heavier weight.
 - the requirement that it be plugged into AC power.
-

Chapter 7

Homework Question #2

2. The advantage of a digital multimeter, compared to an analog multimeter, is:
- low cost.
 - an easy to read measured value.**
 - smaller size and lighter weight.
 - that it uses internal batteries.
-

Chapter 7

Homework Question #4

4. A hydrometer test can be conducted on which battery?
-

Chapter 7

Homework Question #8

8. If a boat light does not come on when its switch is turned on, first expect:
- a blown fuse.
 - corroded contacts between the light bulb and its socket.
 - a defective circuit breaker or switch.
 - a burned out light bulb.**
-

Chapter 7

Homework Question #10

10. AC outlets and GFCIs are best tested with:
- a voltmeter.

- b. a current meter.
 - c. **an outlet tester.**
 - d. a hydrometer.
-

Chapter 7
Homework Question #17

Ref. paragraph 106.

Chapter 7
Homework Question #18

18. The level of ignition system interference can be reduced by:
- a. installing a coaxial capacitor in each spark plug wire.
 - b. using capacitor cable spark plug wires or choke spark plugs.
 - c. using choke cable spark plug wires or capacitor spark plugs.
 - d. **using resistor cable spark plug wires or resistor spark plugs.**
-

Chapter 7
Homework Question #20

20. When equipment is suspected, the first mitigation step is normally to:
