

**UNIT**  
**9** **TEST**

60 marks

**1 Match the words in the left-hand column with those in the right-hand column to make two-word nouns.**

**10 marks**

- |                         |                    |
|-------------------------|--------------------|
| <b>1</b> starter        | <b>a)</b> set      |
| <b>2</b> tape           | <b>b)</b> block    |
| <b>3</b> voltage        | <b>c)</b> source   |
| <b>4</b> soldering      | <b>d)</b> clamp    |
| <b>5</b> socket         | <b>e)</b> motor    |
| <b>6</b> power          | <b>f)</b> material |
| <b>7</b> nickel-cadmium | <b>g)</b> measure  |
| <b>8</b> terminal       | <b>h)</b> iron     |
| <b>9</b> cable          | <b>i)</b> battery  |
| <b>10</b> insulating    | <b>j)</b> tester   |

**2 Complete the table. The nouns end in either -er or -or.**

**10 marks**

	<b>verb</b>	<b>noun</b>
<b>Example</b>	<i>detect</i>	<i>detector</i>
<b>1</b>	absorb	
<b>2</b>	conduct	
<b>3</b>	generate	
<b>4</b>	hold	
<b>5</b>	break	
<b>6</b>	resist	
<b>7</b>	invert	
<b>8</b>	regulate	
<b>9</b>	start	
<b>10</b>	test	

**3 Complete the sentences by using the units from the box.**

**10 marks**

per month   ohms   hertz   amp   milliseconds   watts   degrees   mm<sup>2</sup>  
amps per hour   volts

**Example:** This starter motor operates at 1200 r.p.m..

- 1 The cables in a house have a cross-section area of between 1 and 4 \_\_\_\_\_ .
- 2 The electricity supply is either 110 or 240 \_\_\_\_\_ .
- 3 Alternating current for home supplies has a frequency of 50 \_\_\_\_\_ .
- 4 The resistance of a two kilowatt electric kettle is approximately 125 \_\_\_\_\_ .
- 5 The average car battery self-discharges at a rate of about 5% \_\_\_\_\_ .
- 6 Energy-saving light bulbs have a power consumption of between 10 and 25 \_\_\_\_\_ .
- 7 The typical capacity of a light aircraft battery is 40 \_\_\_\_\_ .
- 8 The lighting circuit in a house is protected by a 5 \_\_\_\_\_ fuse.
- 9 Many circuit breakers have a disconnection time of less than 100 \_\_\_\_\_ .
- 10 The overheat limit of a light aircraft battery is in the region of 70 \_\_\_\_\_ .

**4 Complete these statements with words from the box.**

**10 marks**

core   storage   insulated   reactions   relationship   troubleshoot   formula   transforms  
circuit   voltage

- 1 It is much easier to \_\_\_\_\_ electrical problems if you have a \_\_\_\_\_ diagram.
- 2 In multi- \_\_\_\_\_ cables, the conductors must be \_\_\_\_\_ from each other.
- 3 The \_\_\_\_\_ of Ohm's law shows the \_\_\_\_\_ between current, voltage and resistance.
- 4 An inverter \_\_\_\_\_ direct current into higher \_\_\_\_\_ alternating current.
- 5 The \_\_\_\_\_ and operating conditions of a battery determine how quickly chemical \_\_\_\_\_ take place inside it.

5 Match the questions with the answers.

10 marks

- 1 How do you calculate the voltage?
  - 2 What does the cable armour do?
  - 3 What is the advantage of using busbars?
  - 4 What happens when the battery overheats?
  - 5 When should the motor bearings be replaced?
- 
- a They carry a large current without getting hot.
  - b Within three years of the last overhaul.
  - c It protects the cable from abrasion and impact.
  - d Multiply the current by the resistance.
  - e The BATTERY HOT message appears on the display panel.

6 Read the passage carefully and then select words from the list to complete the text. There are two more words than you need.

10 marks

Bonding and grounding

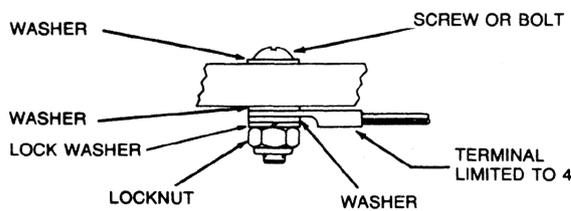


Fig. 9-17. Bolt and nut bonding or grounding to flat surface.

Bonding is the 13 connecting of two or more conducting objects not otherwise adequately \_\_\_\_\_ . Grounding is the electrical connecting of a conducting object to the primary structure for a return path for current. Primary structure is the main frame, \_\_\_\_\_ , or wing structure of the aircraft, commonly referred to as ground. Bonding and grounding connections are made in aircraft electrical systems to:

- Protect aircraft and personnel against hazards from lightning discharge.
- Provide current return paths.
- Prevent development of radio frequency potentials.
- \_\_\_\_\_ personnel from shock hazards.
- Provide stability of radio transmission and reception.
- Prevent accumulation of \_\_\_\_\_ charge.

Bonding jumpers should be made as short as practicable, and installed in such manner that the \_\_\_\_\_ of each connection does not exceed 0.003  $\Omega$ . The jumper must not interfere with the operation of movable aircraft elements, such as surface controls, nor should the normal movement of these elements result in damage to the bonding jumper.

To ensure a low-resistance connection, non-conducting finishes, such as paint and anodising films, should be \_\_\_\_\_ from the attachment surface to be contacted by the bonding terminal. Electric wiring should not be grounded directly to magnesium parts.

Electrolytic action can rapidly \_\_\_\_\_ a bonding connection if suitable precautions are not taken. Aluminium alloy jumpers are recommended for most cases; however, copper jumpers should be used to bond together parts made of stainless steel, cadmium-plated steel, \_\_\_\_\_, brass, or bronze. Where contact between dissimilar metals cannot be avoided, the choice of jumper and hardware should be such that corrosion is minimised, and the part likely to corrode would be the jumper or associated hardware. Figure 9-17 shows the proper hardware combination for making a bond \_\_\_\_\_. At locations where finishes are removed, a protective finish should be applied to the completed connection to prevent subsequent corrosion.

The use of solder to attach bonding jumpers should be \_\_\_\_\_. Tubular members should be bonded by means of clamps to which the jumper is attached. Proper choice of clamp material will minimise the probability of corrosion.

(Source: *Standard Aircraft Handbook* – Reithmaier)

- 1 battery
- 2 copper
- 3 resistance
- 4 fuselage
- 5 removed
- 6 corrode
- 7 resistance
- 8 avoided
- 9 connected
- 10 static
- 11 connection
- 12 protect
- 13 ~~electrical~~