

UNIT
11 **TEST**

60 marks

1 Choose the correct form of the verb in brackets at the end of each sentence. Choose either the infinitive (*to clean*) or the *-ing* form (*cleaning*).

10 marks

- 1 Digital devices are easier _____. (see)
- 2 Components like this are difficult _____. (clean)
- 3 De-icer prevents ice from _____ on aircraft wings. (form)
- 4 Never attempt _____ components into position. (force)
- 5 A layer of grease will help _____ the surface rust-free. (keep)
- 6 They finished _____ the engine two hours ago. (repair)
- 7 Always avoid _____ electrical equipment with wet hands. (touch)
- 8 The procedure involves _____ the engine completely. (strip)
- 9 We need _____ the oil levels regularly. (check)
- 10 They warned us not _____ a water-based solvent. (use)

2 Put a tick (✓) or a cross (✗) to show if these are good or bad maintenance actions.

10 marks

Example: *damage* ✗ *remember* ✓

- | | |
|-------------|---------------|
| 1 lubricate | 6 contaminate |
| 2 confirm | 7 ensure |
| 3 miss | 8 ignore |
| 4 inspect | 9 overload |
| 5 fail | 10 verify |

3 Select the most suitable quantities and units from the box to complete the table.

10 marks

0.015 amps 16,000 metres 220 seconds 0 mm 25–42 lbs

	description	quantity	units
1	Permitted depth of groove on aircraft brake disc	76	
2	Grade of sandpaper		None
3	Lifting capacity of mobile work platform	506	
4	Indicator reading of empty fuel tank		gallons
5	Typical capacity of light aircraft electric cable	10	
6	Height range of wing support jack		inches
7	Length of mobile work platform	3.23	
8	Load-bearing capacity of wing support jack		lbs
9	Time between first and second engine failure	90	
10	Maximum allowed coning of brake disk		inches

4 Complete the sentences by putting the preposition on the right of each sentence in the correct position.

10 marks

- | | |
|---|---------|
| 1 The cable should pass this hole and connect to the block. | through |
| 2 Instead deflating the tyre, they inflated it. | of |
| 3 The pilot was forced to turn back because the bad weather. | of |
| 4 This component has been installed the wrong way. | up |
| 5 There was extensive damage the wall of the tyre. | to |
| 6 Take these plugs and replace them. | out |
| 7 Before you take the cover, check that the machine is switched off. | off |
| 8 Turn the ignition switch the 'run' position. | to |
| 9 We've installed a new circuit the selector. | in |
| 10 Remember to fill the maintenance form. | in |

5 Complete the sentences by choosing the correct modal verb.

10 marks

- 1 Bearings and other moving parts *could / should* be checked regularly for wear.
- 2 Tyre tread depth *must / might* be checked carefully.
- 3 Technicians *should not / must not* touch electrical appliances with wet hands.
- 4 An aircraft *cannot / should not* twist in flight to absorb impact.
- 5 There *should / can* be a number of reasons for low tyre pressure.
- 6 Excessive wear *may / should* create potentially dangerous problems.
- 7 Maintenance crews *should / can* wear protective headgear at all times.
- 8 Analogue devices *might / must* be affected by extreme temperatures.
- 9 Crews *must / may* check that extinguishers are working correctly.
- 10 Passengers *should / must* remain seated during take-off and landing.

6 Read the passage carefully and answer the questions according to the text.

10 marks

Many maintenance errors have their origins in inadequate system design. Most maintainers can list examples of components that can be installed upside down or back to front, or systems that are difficult to access, or tasks that have apparently been designed with three-handed maintenance personnel in mind. Ease of maintainability has generally been a low priority for system designers. Six design principles for the maintainability of systems are listed below.

1. There should be easy access to components.
2. Components that are functionally related should be grouped together.
3. Components should be labeled clearly and informatively.
4. There should be minimal need for special tools.
5. It should not be necessary to make very fine, delicate adjustments in the field.
6. Equipment should be designed to facilitate fault isolation.

Modern maintenance activities require the use of a wide variety of sophisticated testing, measuring and diagnostic equipment. Each item comes with a user interface upon which the maintainer acts to achieve some goal and from which he receives information. Both of these stages – execution (acting) and evaluation (information) – can provoke error and misunderstanding through poor design. This usually arises from a failure on the part of the designer to appreciate the user's point of view.

Many problems arise because the designer assumes that their idea of the system and the user's idea are one and the same. But this is not necessarily the case since designers rarely talk directly to users, nor are they always well informed about the varieties of possible human errors. The user's model is derived from the system image made up of its documentation together with what the user presumes the equipment is designed to do. If this does not make the designer's model clear, then the user will have an erroneous perception of the system's function.

(Adapted from *Managing Maintenance Error*, Reason and Hobbs)

The writer of this passage believes the following.

- | | |
|--|------------|
| 1 Component and system designers make a lot of mistakes. | True/False |
| 2 Some components can be installed in the wrong position. | True/False |
| 3 Some maintenance jobs require three people. | True/False |
| 4 It is important to be able to reach a part easily. | True/False |
| 5 Very small tools are needed for maintenance. | True/False |
| 6 Designers think that maintenance personnel understand their ideas. | True/False |
| 7 Components should be made so that it is easy to troubleshoot problems. | True/False |
| 8 Not enough measuring equipment is available. | True/False |
| 9 There should be more communication between designers and maintenance personnel. | True/False |
| 10 Designers don't understand how easily mistakes are made. | True/False |