

**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> gas      | <b>a</b> motor   |
| <b>2</b> engine   | <b>b</b> spring  |
| <b>3</b> oil      | <b>c</b> point   |
| <b>4</b> fan      | <b>d</b> filter  |
| <b>5</b> valve    | <b>e</b> content |
| <b>6</b> power    | <b>f</b> turbine |
| <b>7</b> spark    | <b>g</b> belt    |
| <b>8</b> starter  | <b>h</b> turbine |
| <b>9</b> flash    | <b>i</b> block   |
| <b>10</b> sulphur | <b>j</b> plug    |

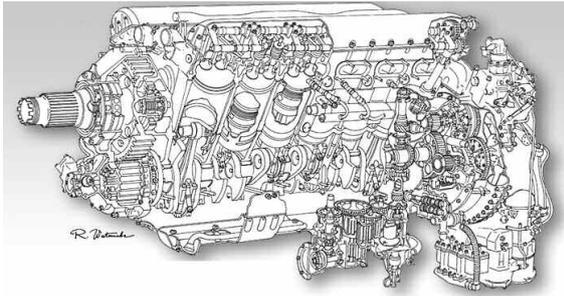
**2 Some letters are missing from these maintenance verbs. Write the complete spelling of each word.**

**10 marks**

- 1** reatt \_ \_ h
- 2** d \_ \_ mantle
- 3** \_ \_ place
- 4** rem \_ v \_
- 5** \_ \_ fit
- 6** stri \_ \_ do \_ n
- 7** in \_ pec \_
- 8** l \_ bri \_ ate
- 9** re \_ sse \_ ble
- 10** \_ \_ build

**3 Select the correct units from the box to complete this engine specification table.**

10 marks



kg hp rpm litres stroke m volts degrees psi litres per minute

			units
<b>Example</b>	<i>piston speed</i>	15.2	<i>metres per second</i>
<b>1</b>	supercharger speed	28,500	
<b>2</b>	oil pressure	60	
<b>3</b>	weight	698	
<b>4</b>	length	1.83	
<b>5</b>	take-off fuel consumption	13.5	
<b>6</b>	displacement	27	
<b>7</b>	take-off power	1,600	
<b>8</b>	engine type	4	
<b>9</b>	angle between cylinder blocks	60	
<b>10</b>	starter motor	24	

**4 Complete the sentences with words from the box.**

10 marks

radial smoothed bolted similar flywheel in-line circular  
rotated airframe perpendicular

- The earliest aircraft engines were conventional \_\_\_\_\_ piston engines \_\_\_\_\_ to those used in cars.
- This meant that there was vibration \_\_\_\_\_ to the axis, which caused stress on the \_\_\_\_\_.
- The vibration could only be \_\_\_\_\_ out by means of a heavy \_\_\_\_\_ which provided increased angular momentum.
- The \_\_\_\_\_ engine, which had cylinders in a \_\_\_\_\_ arrangement, reduced vibration by distributing it more evenly.
- In the Gnome rotary engine, the propeller was \_\_\_\_\_ to the engine block, which \_\_\_\_\_ round the stationary crankshaft and acted as a flywheel.

**5 Expand the notes to make sentences using the present perfect tense.**

**10 marks**

**Example:** Since/1990/Eurofighter project/develop quickly  
*Since 1990, the Eurofighter project has developed quickly.*

- 1 Air traffic/increase dramatically/since/1980
- 2 Commercial airliners/use/kerosene/for/the past 50 years
- 3 On-board radar systems/make/flying much safer
- 4 Both Boeing and Airbus/introduce/new aircraft/in/last two years
- 5 Since/1990s/budget airlines/operate/Europe

**6 Read the passage carefully and decide whether the statements are true or false, according to the text.**

**10 marks**

### **Inspection and Rebuilding of Mikuni Fuel Pumps**

It is recommended that pumps be inspected at the 150 hour inspection and rebuilt or replaced at the 300 hour overhaul over at least every two years. Over time, the gaskets and diaphragms will deteriorate and need to be replaced. Be sure to use only genuine Mikuni replacement parts. The quality of some foreign gaskets and diaphragms can be inferior and prone to premature failure.

#### **Procedure**

Remove the pump from the aircraft and prepare a large area on your workbench where you can lay the removed parts out in the order they are removed. Use a clean cloth to keep the screws and components from rolling around. Using a Philips head screwdriver, remove the four screws, holding the cover on. Pull the pump apart, carefully trying not to tear the gasket material. Note the order of the gaskets and clear diaphragm. While you may think they are identical on both ends, they are definitely not. Lay these gaskets out in the same direction as you removed them. At this point, you need to take a good look at how this unit operates. A flapper or one-way valve on each end separates the centre pulse chamber. As the chamber pulses, the flapper valves allow fuel to flow in one direction only. Inspect the area around each valve for wear with a magnifying glass. If the aluminium body is at all deformed, replace the entire pump. If this area passes inspection, prepare to install the new gaskets. Lay them out next to the old gaskets, paying careful attention to the direction top and bottom and end for end. Only one way works. If anything fails to line up when you place the cover back on, stop and see what's wrong. Use the new screws to seal the pump back up. Tighten screws firmly. Test the pump by blowing in the inlet and outlet. Air should pass one way only.

(Adapted from <http://www.800-airwolf.com/pdffiles/ARTICLES/part%2053.PDF>)

- |   |            |
|---|------------|
| <b>1</b> Replace the pump every two years.                  | True/False |
| <b>2</b> Only use components made by the pump manufacturer. | True/False |
| <b>3</b> Clean the parts with a cloth.                      | True/False |
| <b>4</b> Keep the screws for later use.                     | True/False |
| <b>5</b> It is easy to damage the gasket.                   | True/False |
| <b>6</b> All the gaskets should face the same direction.    | True/False |
| <b>7</b> Wear safety glasses to inspect the pump.           | True/False |
| <b>8</b> There are two one-way valves.                      | True/False |
| <b>9</b> The pump body is always made of aluminium.         | True/False |
| <b>10</b> Match the new gaskets to the old ones.            | True/False |