READING PASSAGE 1

*You should spend about 20 minutes on **Questions 1-13**, which are based on Reading Passage 1 below.*

The Olympic Torch

The evolution of an internationally recognized symbol

Every Olympic Games begins with a torch-lighting ceremony in Greece, the home of the original Games, followed by a torch relay in which runners carry the flame to the Olympic stadium in the country that is hosting the Games. Each runner carries the torch for one stage of its trip, then lights the torch of the next person in the relay. The final torchbearer runs around the stadium track once, the lights the Olympic cauldron, signalling the official start of the Olympic Games.

Each time the Games are held, a new torch is created. Sometime before the Games begin, different designs are sent in to the Olympic Committee, who select the one that seems most functional and aesthetically pleasing. The first torch used in the modern Olympics (the 1936 Berlin Games) was made of a thin steel rod topped with a circular piece from which the flame rose. It was inscribed with a dedication to the runners. Since then, designers have tried to create torches that represent the host country and the theme for that Olympic Games. The Salt Lake City Winter Olympics torch was made of crystal to resemble icicles, in order to represent that year's theme, 'Light the fire within'. The Athens Olympic torch resembled an olive leaf, a symbol of Greece and of peace.

More than a year may be needed to design and construct a torch. It may be carried over deserts, mountains and oceans and must survive wind, rain and snow. It must be light enough to be comfortable for each runner to carry (usually between 1.4 and 1.8 kg). It must hold enough fuel to stay lit for the entire stage and must burn brightly enough to be visible even on a sunny day, and it must also be designed to keep the runner safe from the heat of the flame as well as from hot debris falling from the flame. Anywhere from 10,000 to 15,000 torches are constructed, to accommodate the thousands of runners who carry them through each stage of the Olympic relay. Each runner has the opportunity to purchase their torch afterwards to remind them of the honour of carrying it.

Although torch design and construction vary from year to year, the torch always contains the same basic elements: a storage space for the fuel, a way of conveying the fuel to the top of the torch where the flame burns, and an aerodynamic outer shell. Early torches burned everything from gunpowder to olive oil. These substances were not always the most efficient fuel sources, and they were sometimes dangerous. In the 1956 Games, magnesium and aluminium were used as fuel, and in the final stage burning chunks fell from the torch and seared the runner's arms. Liquid fuels were introduced at the 1972 Munich Games, and since that time all torches have carried liquid fuels- stored under pressure as a liquid, but burned as a gas to produce a flame.

The torch designed for the 1996 Atlanta Olympics was the only Olympic torch designed with a handle in the middle of the torch, instead of at the bottom. Below the handle it had an aluminium base housing a small fuel tank, which had a brass valve at the top with hundreds of tiny holes. Liquid fuel was forced through these holes and when it reached the pipe on the other side the pressure dropped, and the liquid fuel turned into a gas for burning.

The 1996 torch was originally intended to be fuelled by propane (the gas used to heat home stoves and barbecue grills), but the designers found that the flame was not visible enough, particularly in windy conditions, and so in the final version they switched to propylene, which produced a brighter flame. But because propylene contains a high level of carbon, it also produces a lot of smoke. In 2000, the creators of the Sydney Olympic torch came up with a more environmentally friendly design. To fuel their torch, they decided to use propane and butane, which when mixed together produce a strong flame without making a lot of smoke. Because this mix can be stored as a liquid under relatively low pressure, it can be kept in a lightweight container. The shape and colour of the outer shell of the torch were inspired by the roof of the Sydney Opera House. The liquid fuel was stored in an aluminium canister, located about halfway up the torch, and flowed up to the top of the torch through a pipe. Before leaving the pipe, the liquid fuel was forced through a tiny hole. Once it moved through the hole, there was a pressure drop, causing the liquid to turn into a gas for burning.

The engineers behind both the 1996 and 2000 torches included a burner system that utilised a double flame, helping it to stay lit even in erratic winds. One flame was big, so it could be seen clearly, but it was unstable in winds. The other one burned at a higher temperature, producing a flame that was very stable, because its in internal location protected it from the wind, enabling it to relight the first flame should it go out.

Future torch design will continue to evolve as technology improves and new fuels provide even greater safety and reliability.

Questions 1 - 4

*Complete the summary using the list of words, **A-K**, below.*

*Write the correct letter, **A-K**, in boxes 1-4 on your answer sheet.*

The Olympic Torch

Every time the Olympics are held, a new torch is developed. The authorities choose the best **1**of the many that are submitted.

The torch takes over a year to produce. It must be lightweight, safe and suitable for use in a wide range of **2……..,** and its **3…….** must be easy to see. After a torch has been used, the runners are allowed to buy it as a **4…….** of game.

List of words

A	climates	**B**	competitions	**C**	souvenir
D	cultures	**E**	prize	**F**	flame
G	design	**H**	inscription	**I**	production
J	sports	**K**	gift		

Questions 5-9

Look at the following descriptions of Olympic torches (Questions 5-9) and the list of Olympic Games below.

Match each description with the correct Olympic Games, **A-G**.

Write the correct letter, **A-G**, in boxes 5-9 on your answer sheet.

List of Olympic Games

A Berlin Olympics (1936)

B Melbourne Olympics (1956)

C Munich Olympics (1972)

D Atlanta Olympics (1996)

E Sydney Olympics (2000)

F Salt Lake City Winter Olympics (2002)

G Athens Olympics (2004)

5. The writing on the torch referred to those who carried it.

6. Its design suggested the theme of heat and cold.

7. The combination of fuels used proved to be unsafe.

8. It was the first design which did not use solid fuel.

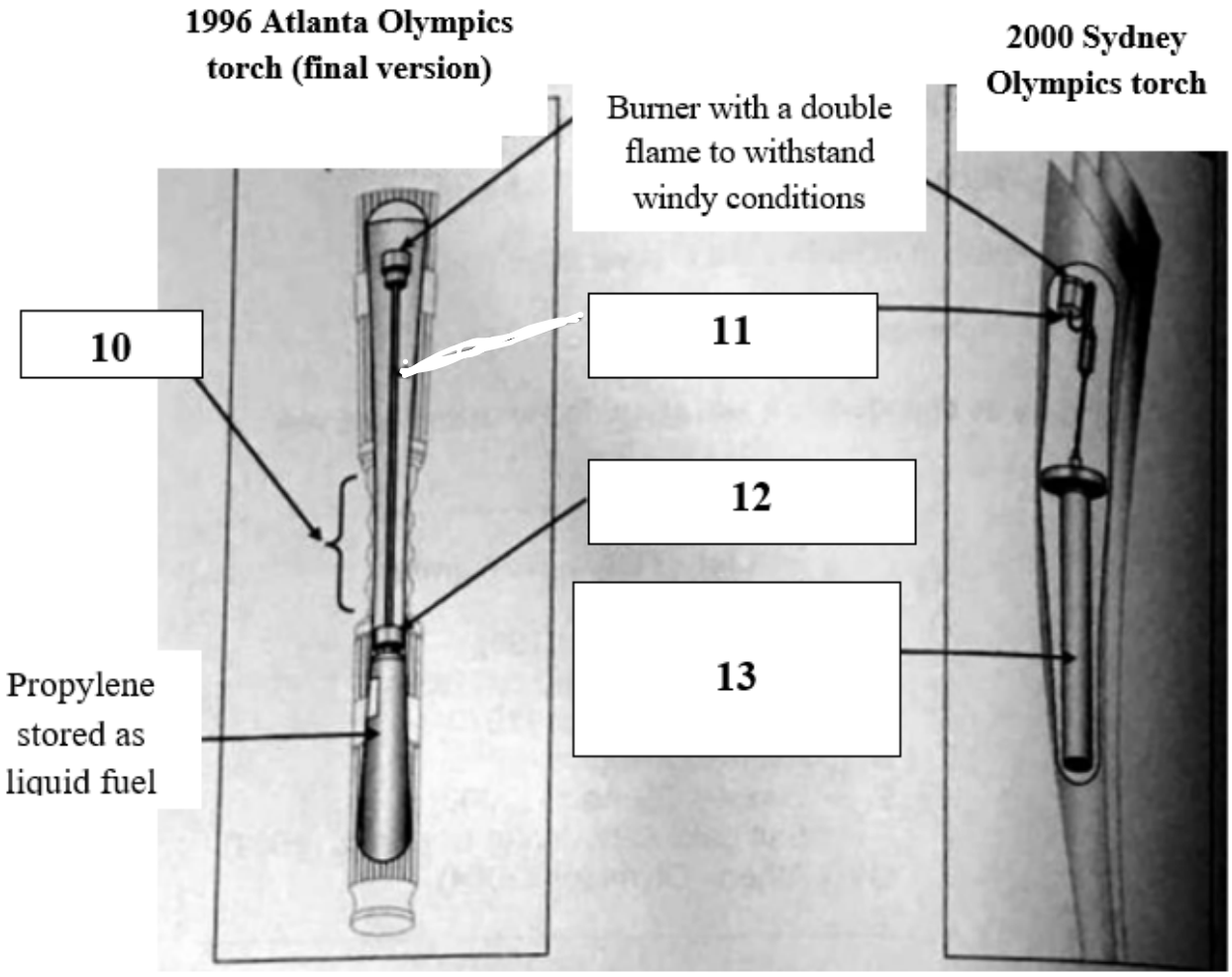
9. The fuel was changed at a late stage in the design process.

Questions 10 - 13

Label the diagram below.

*Choose **NO MORE THAN TWO WORDS** from the passage for each answer.*

Write your answers in boxes 10-13 on your answer sheet.



- A **10……**
- fuel in the form of a/an **11……**
- brass valve with many small **12……**
- combination of **13……**

and butane stored as liquid