FOR OFFICIAL USE

Nati
Quali cations
EXEMPLAR PAPER ONLY

Mark

EP22/H/01

Graphic Communication

Date — Not applicable

Duration — 2 hours

* EP22H01 *

Fill in these boxes and read what is printed below.

Full name of centre

Town

Forename(s)

Surname

Number of seat

Date of birth

Day Month Year

Scottish candidate number

Total marks — 70

Attempt ALL questions.

Write your answers clearly in the spaces provided in this booklet. Additional space for answers is provided at the end of this booklet. If you use this space you must clearly identify the question number you are attempting.

All dimensions are in mm.

All technical sketches and drawings use third angle projection.

You may use rulers, compasses or trammels for measuring.

In all questions you may use sketches and annotations to support your answer if you wish.

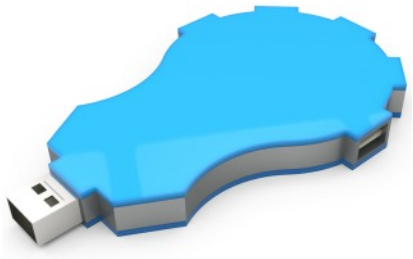
Use **blue** or **black** ink.

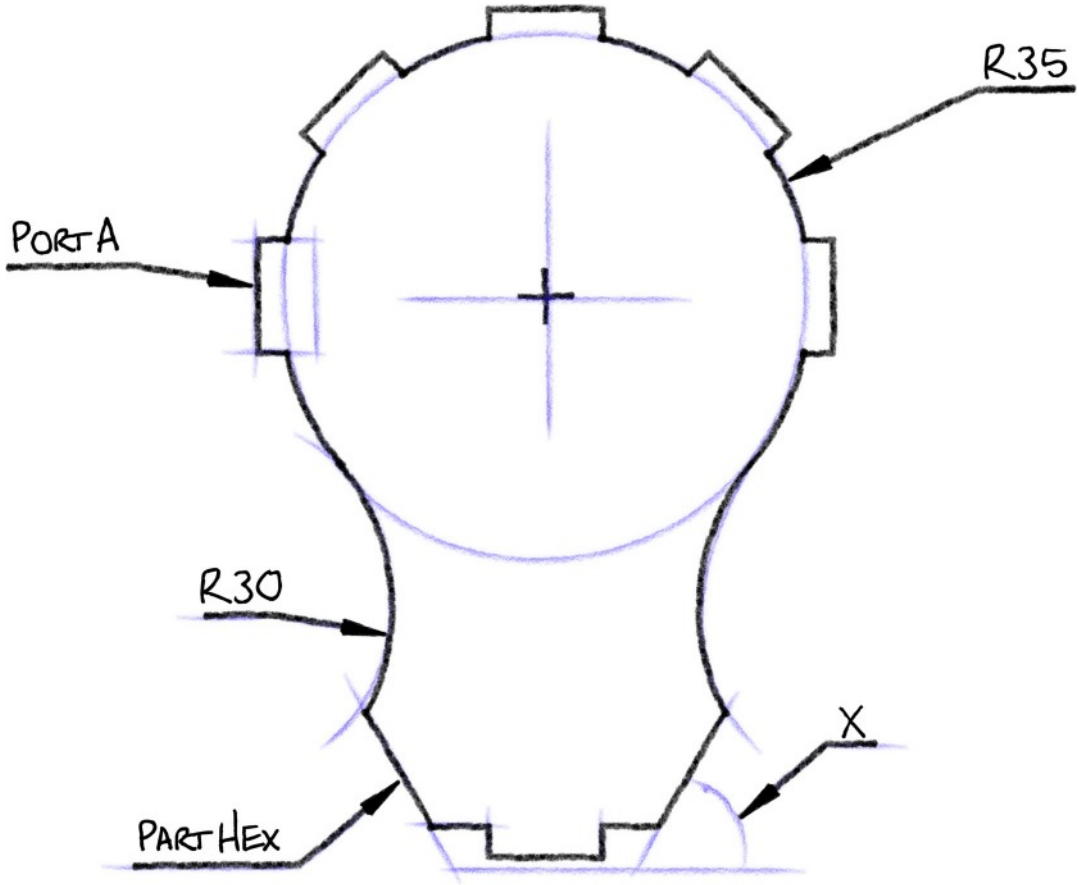
Before leaving the examination room you must give this booklet to the Invigilator; if you do not, you may lose all the marks for this paper.

Attempt ALL questions

Total marks — 70

1. A USB hub has been modelled by a CAD technician.





A 3D CAD model of the USB hub and its preliminary sketch are shown above.

1. (continued)

(a) Describe, with reference to 2D drawing techniques, how you would create a tangent between the R30 and the R35 arcs. You may write your answer and/or sketch in the preliminary sketch on the previous page to support your answer if you prefer. **5**

The USB adaptor has five ports around the upper arc. The CAD technician created a 2D drawing using the information on the preliminary sketch. When drawing the ports, port A was used as the starting point.

(b) Describe, with reference to 2D CAD drawing techniques, how the CAD technician would draw the other ports. You may write your answer and/or sketch in the preliminary sketch above to support your answer if you prefer. **4**

(c) The USB hub is symmetrical about the vertical centre axis.

State angle X. **1**

MARKS | DO NOT WRITE IN THIS MARGIN

2.

Threaded bolt

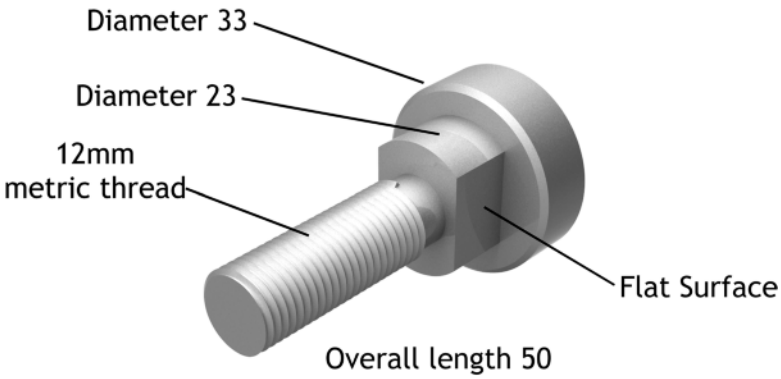
A threaded bolt is shown above.

Apply the following to the elevation below, taking account of British Standards conventions:

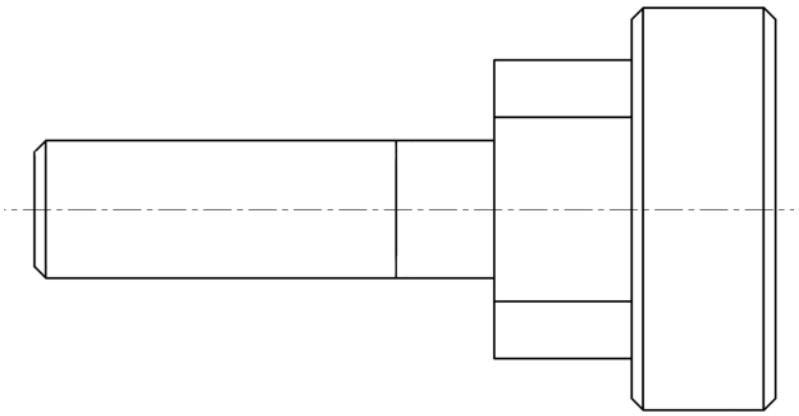
(a) The lines to indicate a thread, at the correct location. **1**

(b) The four dimensions shown on the pictorial view, at their correct locations. **4**

(c) The symbol to indicate the flat surface, at the correct location. **1**



Pictorial view



Elevation

MARKS | DO NOT WRITE IN THIS MARGIN

3. Infographics are a popular way of presenting statistical information.

(a) **Explain** how the design of the above infographic has been influenced by **choice of images**, **colour** and **typeface**, in attempting to communicate the information. **3**

3. (continued)

The silhouette of the child at the top of the infographic was electronically captured and inserted into the DTP document.

(b) Describe how a hard copy image could be captured and inserted into a DTP document, making reference to file type. **2**

The graphic designer decided to make digital copies rather than hard copies of the infographic.

(c) Describe the advantages of this decision. **2**

MARKS | DO NOT WRITE IN THIS MARGIN

4. For this question, you must refer to the magazine layout shown in the supplement at the end of this Exemplar Question Paper.

(a) State **two** instances where the graphic designer has created depth to add interest in the magazine layout. **2**

(b) State an example of emphasis in the layout **and** explain the effect created. **2**

The graphic designer has made use of value in the magazine layout.

(c) State where value has been used in the layout **and** explain the effect it has. **2**

(d) Describe how the graphic designer has created an informal and interesting look to the magazine layout. **2**

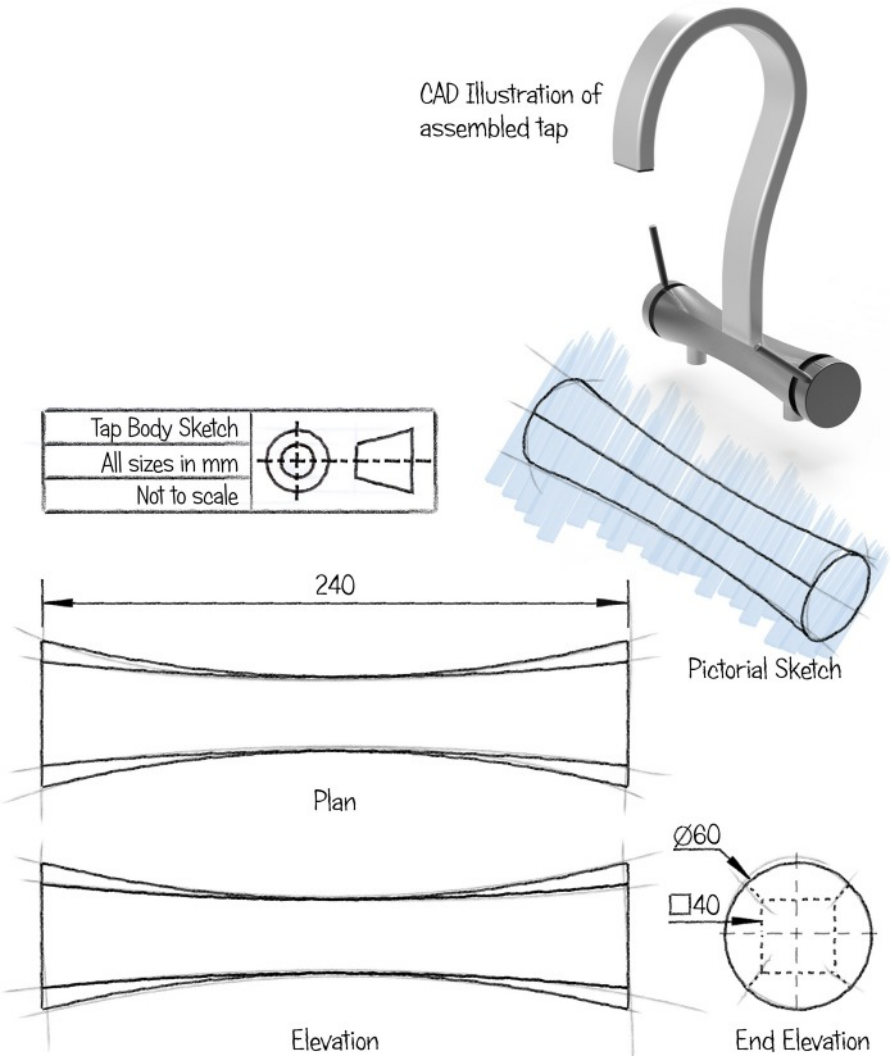
4. (continued)

(e) State where rhythm has been used in the magazine layout. **1**

Throughout the magazine layout, the graphic designer has made use of varied proportion.

(f) Explain what effect the use of varied proportion has on the magazine layout. **2**

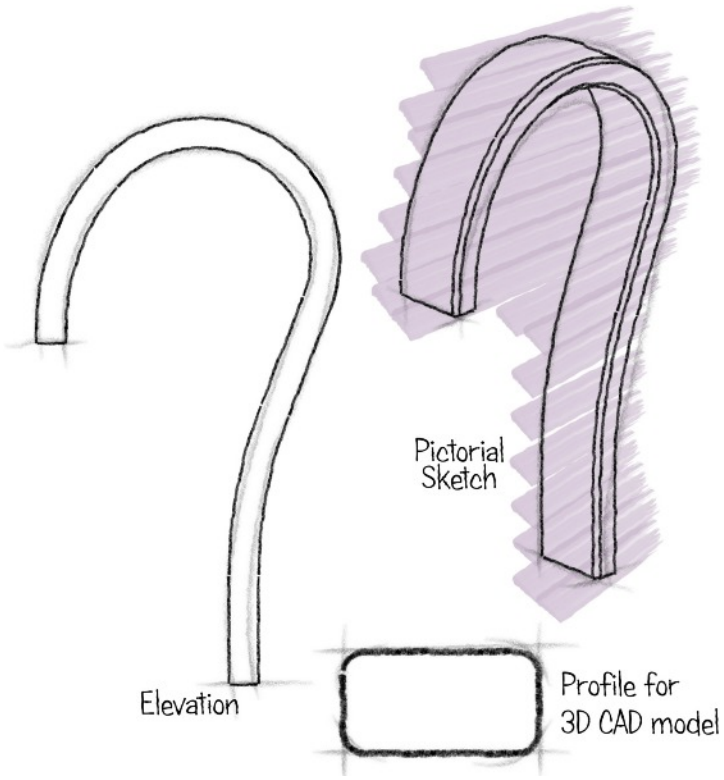
5.



Preliminary sketches of a tap body and an assembled 3D CAD model of the tap are shown above.

(a) Describe, with reference to 3D CAD modelling techniques, how the tap body can be modelled. You should make references to the dimensions shown above. **3**

5. (continued)



Preliminary sketches of the neck of the tap are shown above.

(b) Describe, with reference to 3D CAD modelling techniques, how the neck of the tap can be created and hollowed to allow water to flow through it. **2**

5. (continued)

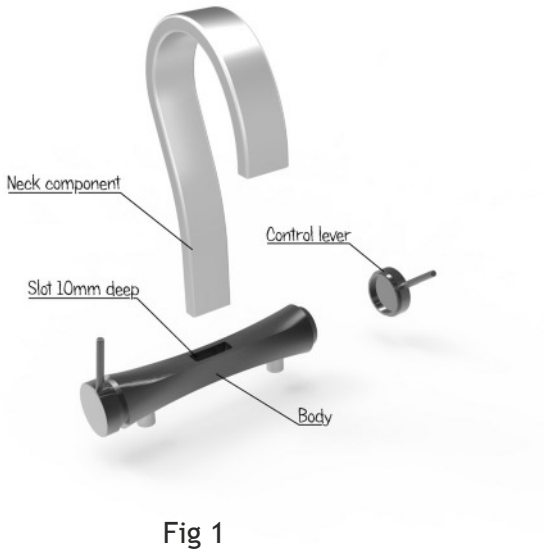


Fig 1

A partially assembled 3D model of the tap is shown in Fig 1 above.

Fig 2

The tap components shown in Fig 2 above were created using a "bottom up" approach.

(c) Describe "bottom-up" CAD modelling. **2**

5. (continued)

(d) (i) Describe, with reference to constraints, how the neck and body components of the tap will be assembled. **2**

(ii) Describe, with reference to constraints, how the control lever and body components of the tap will be assembled. **2**

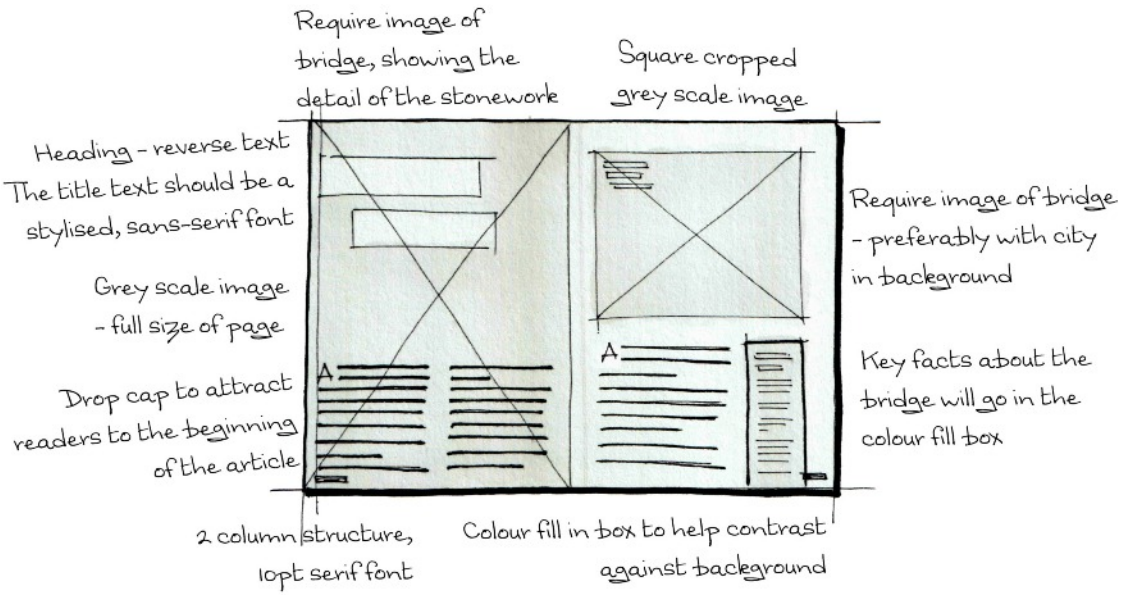
MARKS | DO NOT WRITE IN THIS MARGIN

6. Graphic design is often used to provoke an emotional response. "Save the Children" ran a campaign in 2006 using the graphic below.

Explain how the various elements of the graphic have been used to achieve maximum impact. **4**

MARKS DO NOT WRITE IN THIS MARGIN

7.



A thumbnail graphic is shown above.

Thumbnails are used extensively by graphic designers to explore and develop ideas.

(a) State two reasons why thumbnails are not appropriate to communicate ideas with a client. **2**

7. (continued)

The graphic designer decided to make use of stock photographs, such as that shown above, for the publication. These were purchased online.

(b) Describe one advantage and one disadvantage of using stock photographs. **2**

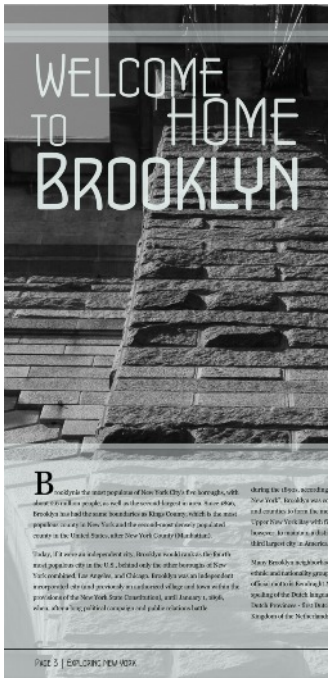
7. (continued)

"Drop caps" have been applied at the beginning of the body text on each page of the draft layout shown above.

(c) Describe a problem that the reader may experience with this approach. **1**

(d) Explain the issue the graphic designer could face when adding reverse text upon a greyscale image. **1**

7. (continued)



Part of the layout is shown above.

(e) Describe, with reference to the part layout, how the graphic designer has made use of the following terms.

(i) Justification **1**

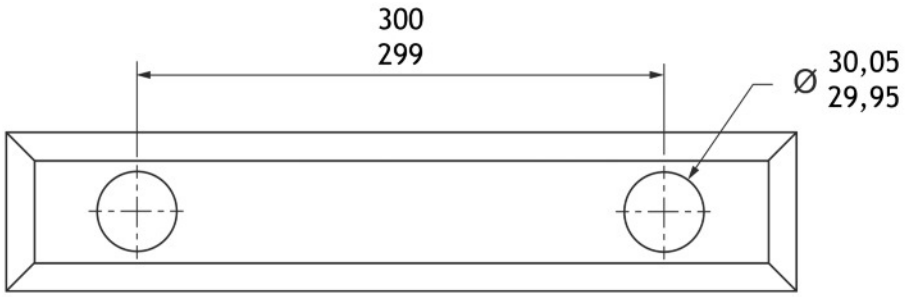
(ii) Alignment **1**

(iii) Gutter **1**

(iv) Transparency **1**

MARKS | DO NOT WRITE IN THIS MARGIN

8.



Elevation

A 3D CAD model and elevation of a bracket are shown above.

The location pins, each Ø30 mm, are set apart at 300 mm nominal centres. There are tolerances on both the **sizes and location** of the pins.

(a) Calculate the maximum and minimum gap between the pins. **2**

Maximum _____

Minimum _____

(b) Explain why tolerances are an important feature in production drawings for manufacturing. **2**

_____

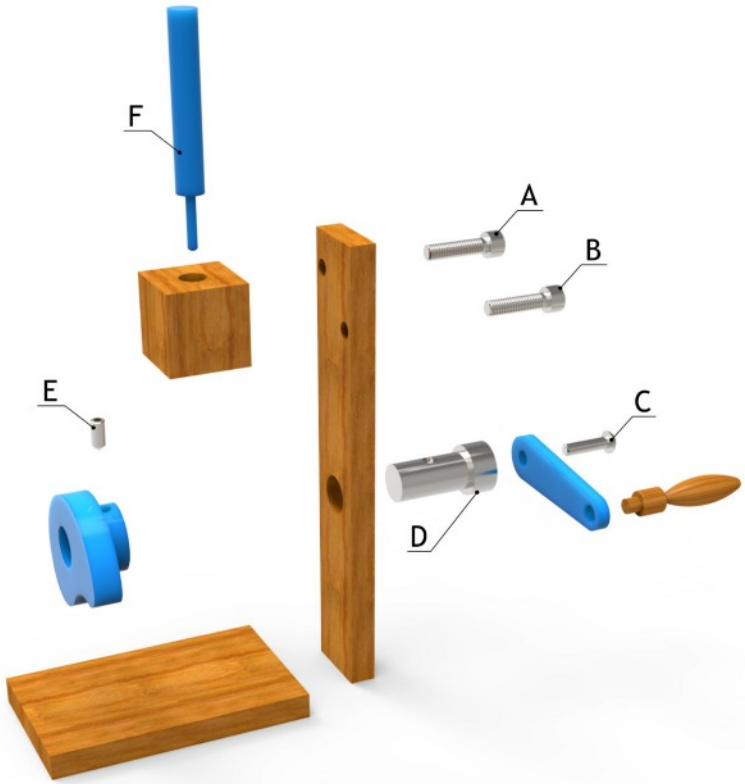
_____

_____

_____

MARKS | DO NOT WRITE IN THIS MARGIN

9.

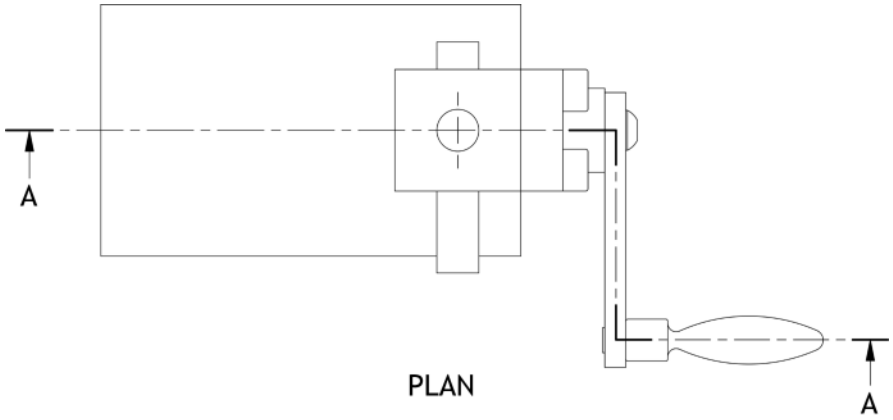


Exploded model

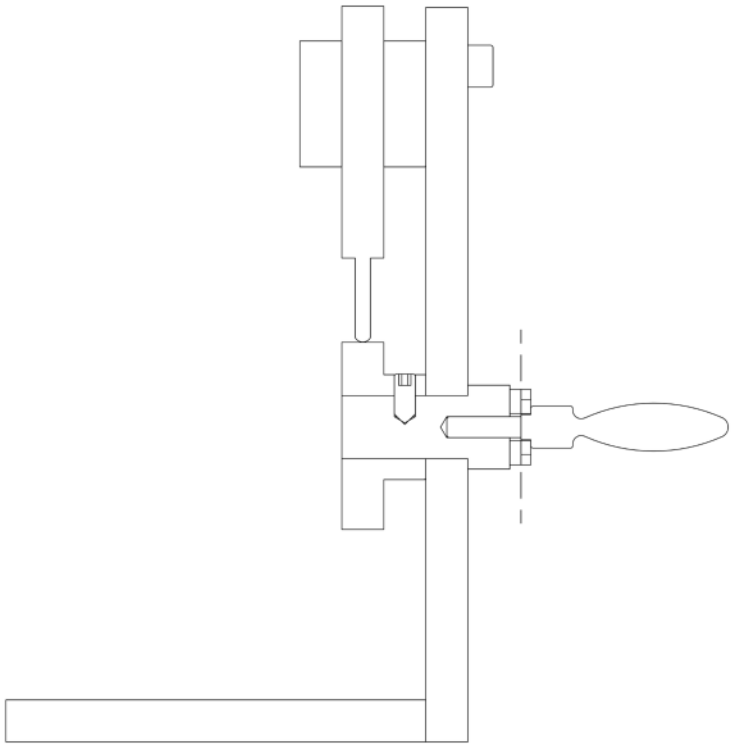
An exploded model of a mechanical device is shown above.

9. (continued)

Apply hatching to section A-A on the drawing of the device, taking account of British Standards conventions. You should not section any component parts labelled A-F on the exploded 3D model shown opposite. **7**



PLAN



SECTION A-A

[END OF EXEMPLAR PAPER]

4,877

Is the average climb rate in ft/min achievable by any of the planes and pilots

44 The number of litres of fuel a plane gets through in one lap of the course.

6 The length, in metres of the EDGE 540 plane. the wingspan totals 7.44m and has a top speed of 426.9kph. Only 230 knots.

The Las Vegas Super Air Race marks the seventh and penultimate race of the season, and as the World Championship hots up in the Nevada Desert, the stakes have never been higher.

982

The number of competitive hours of racing so far this season. The 2014 Super Air Race World Championships is heading for the season showdown in Las Vegas, but the race for the title is not over by any means.

43 The number of points available in every race. The top 8 finishing pilots are awarded points. 1st place pilot receives 12 world championship points. Pilots finishing 9th to 12th receive no points.

25 The maximum G-Force experienced by pilots whilst navigating the chicane section of the course. 5 times as many G's an F1 driver will ever experience.

The the Super Air Race Pilots on the Las Vegas Motor Speedway racetrack at the second-last stop of the season in Las Vegas, USA on 11 and 12 October.

2014 BY THE NUMBERS

3 The number of sectors in the race. Detailed timing sheets are produced after each flying session, which have all the different sectors, know are split times, with speeds included.

79 In seconds, is the average lap time recorded by the pilots in the previous 7 races. the fastest lap was achieved by Austrian pilot Hannes Arch in Abu Dhabi with a time of 74.34 seconds.

12 The number of pilots competing in the Master Class category in eight races across the globe for the title of 2014 Super Air Race World Champion. Pilots can win World Championship points at each race and the pilot with the most points after the last race of the season becomes the Super Air Race World Champion.

Paul Bonhomme leads the standings by 1 point. He is the most successful pilot in the history of the Super Air Race. The celebrated British Ace has won a record 13 races and been on the podium 36 times in the 50 races since the sport was created in 2003.

109 The FAI was founded in France 109 years ago in 1905 and is a non-governmental and non-profit-making organisation. They recognize the Super Air Race World Championships as an official World Championship.

53 The age of the oldest pilot to compete in the Super Air Race World Championship. The next oldest contender is 36...

25 The number of world nations represented at the 2014 Super Air Race World Championships. So far 12 different nation's pilots have taken home one of the top 3 places in the championships - which undoubtedly gathers together the world's greatest stunt pilots.

62 The number of replacement engines planes can get through in a year of competition.

63 The time it takes, in seconds, for a pilot to reach 2,000ft above sea-level from a standing-still take-off.