



L-Università
ta' Malta

MATRICULATION AND SECONDARY EDUCATION CERTIFICATE
EXAMINATIONS BOARD

**ADVANCED MATRICULATION LEVEL
2026 FIRST SESSION**

SUBJECT:	Graphical Communication
PAPER NUMBER:	I
DATE:	18 th May 2026
TIME:	9:00 a.m. to 12:05 p.m.

Directions to Candidates

Write your index number where indicated at the top of all drawing sheets.

Attempt any **FIVE** questions.

Programmable calculators cannot be used.

Unless otherwise stated:

- a. drawings should conform to B.S or equivalent (ISO) standards;
- b. all dimensions are in millimetres;
- c. all answers are to be accurately drawn with instruments;
- d. all construction lines must be left in each solution;
- e. drawing aids may be used.

Dimensions not given should be estimated.

Careful layout and presentation are important.

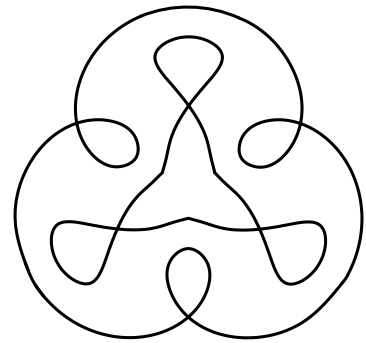
Marks will be awarded for accuracy, clarity and appropriateness of constructions.

Question 1.

The logo of an engineering company that manufactures cycloidal robotic actuators is shown in Figure 1a. The logo consists of a combination of a cycloidal curve and loci of attached linkages. Dimensions and full details of one third of the construction of the logo are given in Figure 1b.

The curves are generated as follows:

- The $\varnothing 40$ circle rolls clockwise for one revolution on the R60 directing arc.
- Point P on the generating circle generates the cycloidal curve.
- PR is a link that is pin jointed to the generating circle at P.
- Link PR slides through swivel S.
- End R of the link generates the locus of the second curve.



CYCLOIDAL ROBOTIC ACTUATORS

Figure 1a

- Copy Figure 1b. (2)
- Construct the locus of Point P on the generating circle as the rolling circle rolls for one revolution without slipping on the directing arc. (12)
- Name the curve generated. (1)
- Construct the locus of end R as link PR slides through swivel S while end P rotates to produce the cycloidal curve. (5)

Note:

The length of link PR is 140 mm.

(Total: 20 marks)

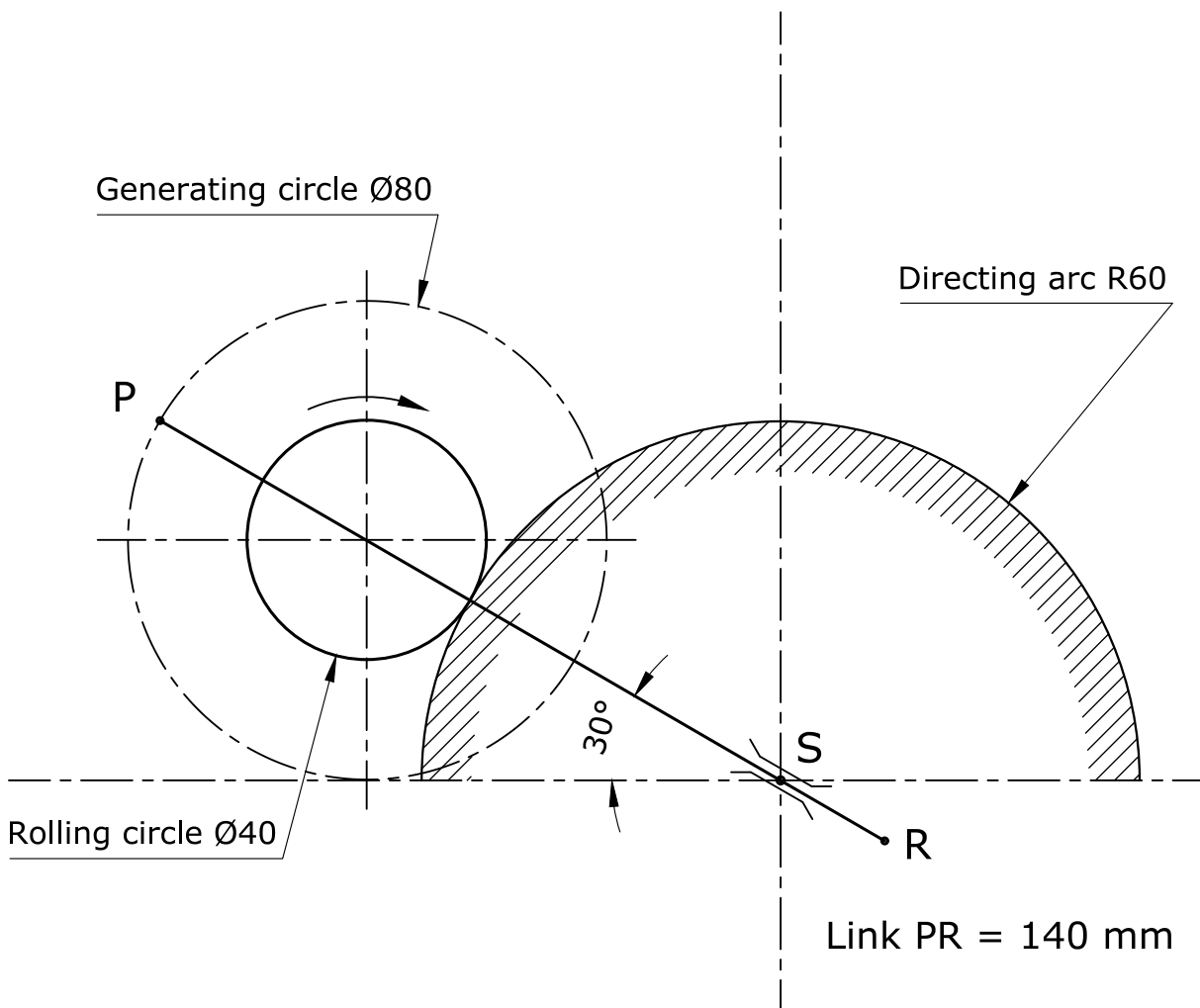


Figure 1b

Question 2.

A pictorial view of an end boot transition piece connecting a cylindrical to a rectangular duct is shown in Figure 2a.

Two dimensioned orthographic views are also given in Figure 2b.

- Copy the given views. (1)
- Draw the crease lines in both views. (2)
- Label the crease lines. (1)
- Construct the necessary true lengths. (6)
- Draw a half-surface development of the transition piece. (10)

Note:

Take X-1 as the seam line.

(Total: 20 marks)

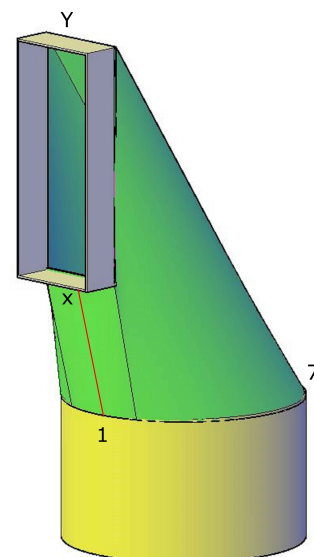


Figure 2a

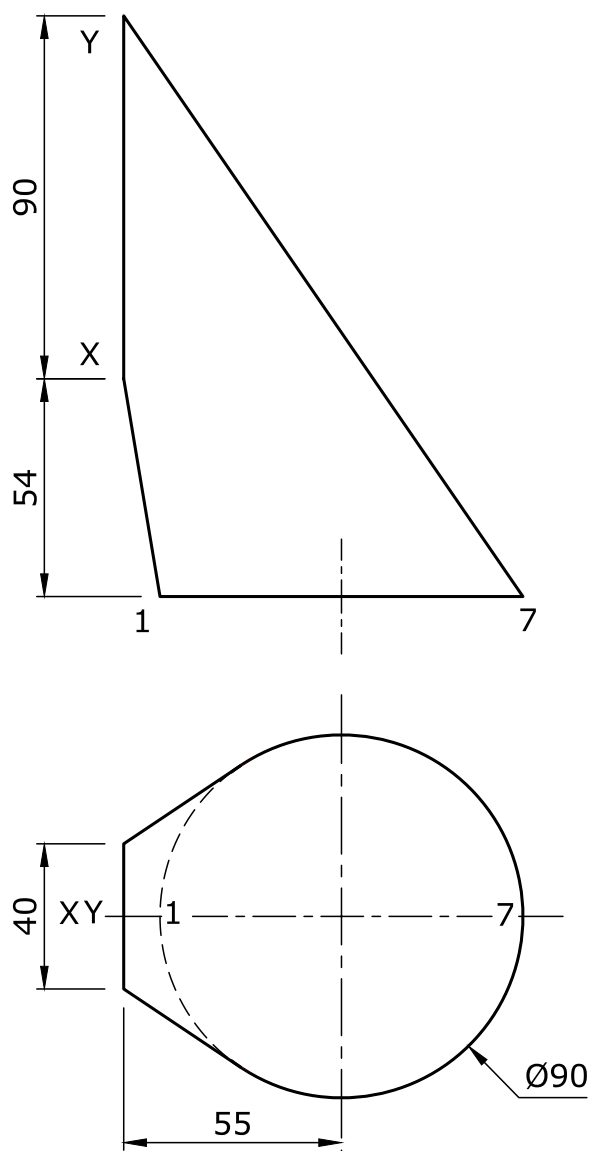
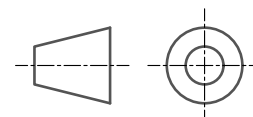


Figure 2b



Question 3.

Figure 3a illustrates a pictorial view of a shaft holder. A plan and an incomplete front elevation are given in Figure 3b.

- Copy the given orthographic views. (4)
- Complete the front elevation showing clearly the curves of intersection resulting when the solid of revolution intersects the counterbored holes and the base profile. Show hidden detail. (16)

(Total: 20 marks)

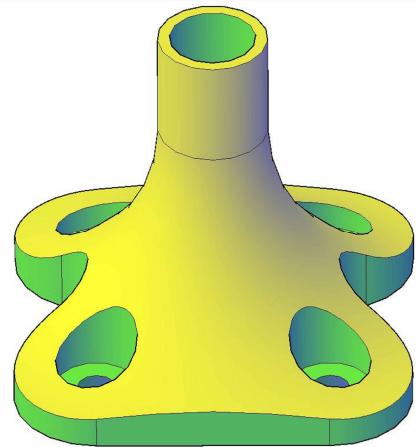


Figure 3a

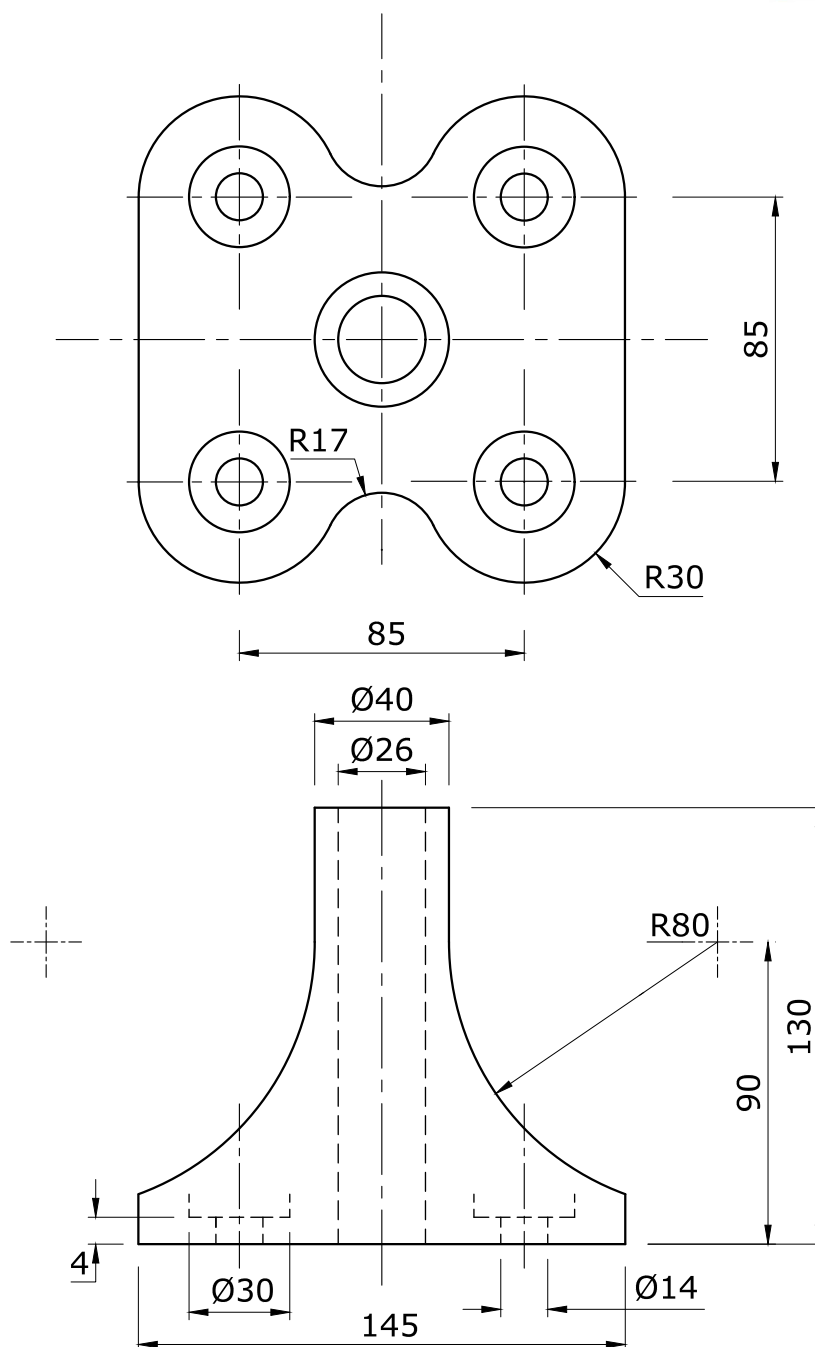
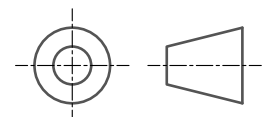


Figure 3b



Question 4.

Figure 4a shows a pictorial view of a compound solid resting on the horizontal plane and cut by an oblique plane VTH. The section above the cutting plane is removed.

Dimensions and other details are given in Figure 4b.

- Copy the given views. (2)
- Project an auxiliary front of the solid. (4)
- Convert the oblique plane into an inclined plane. (2)
- Complete the truncated plan. (4)
- Complete the truncated front elevation. (4)
- Project the true shape of cut. (4)

Note:

Show hidden details.

(Total: 20 marks)

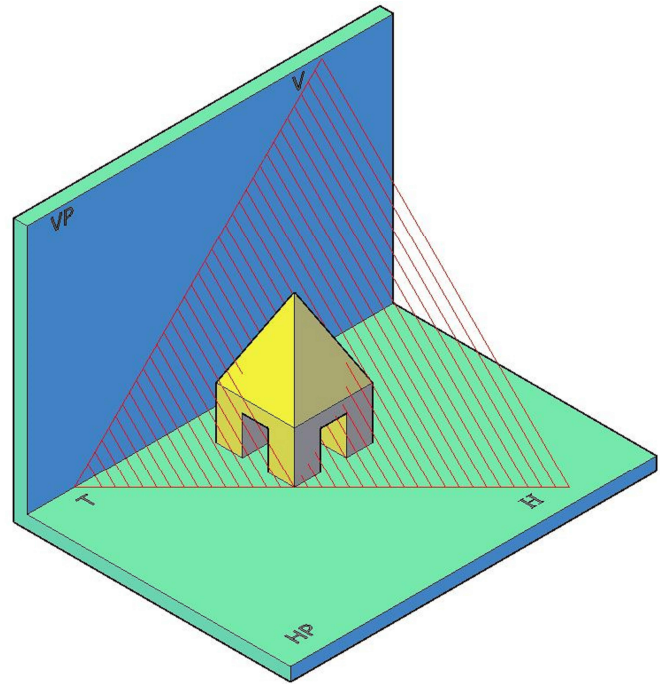


Figure 4a

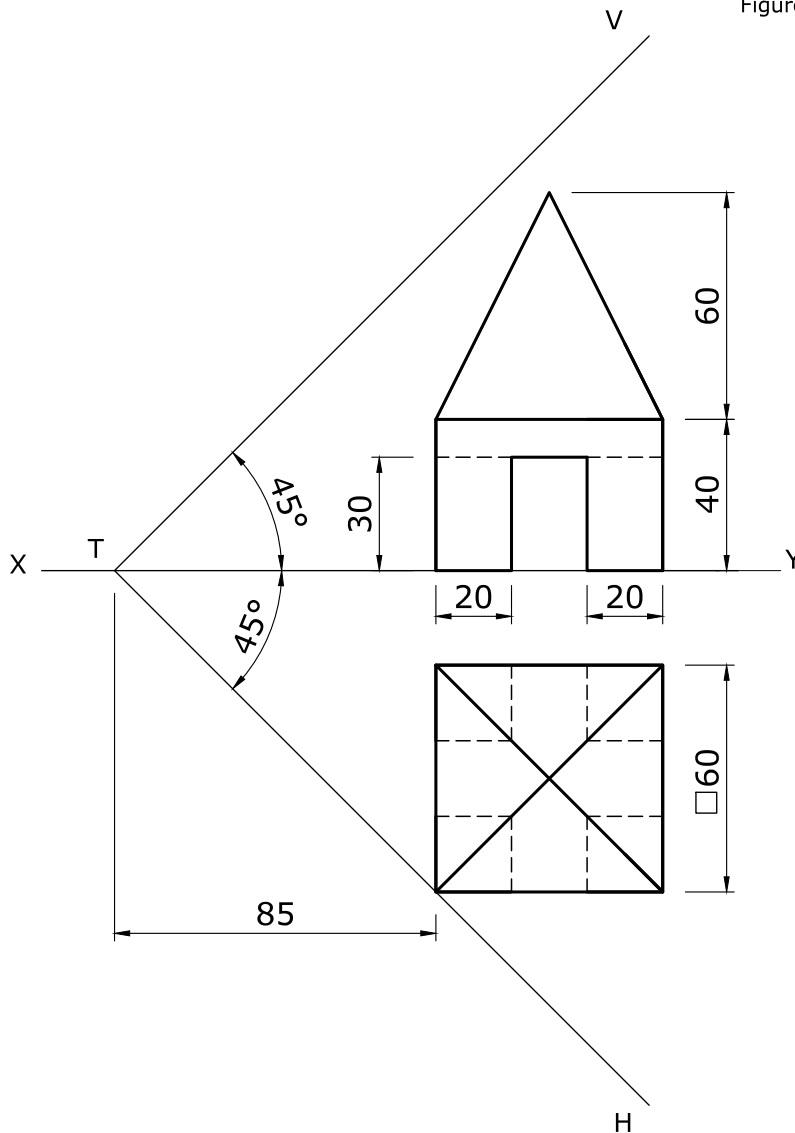
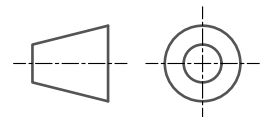


Figure 4b



Question 5.

The 18 m beam shown in Figure 5a and Figure 5b is hinged at the left-hand end H and supported by a structural tie rod which can either be connected between P and Q (option 1) or between R and S (option 2).

The beam, which weighs 50 kN, is loaded as shown in Figure 5c.

- Using a scale of 10 mm representing 1 m, draw the space diagram (Figure 5c). (2)
- Combine the applied loads into a single force indicating also its position along the beam. Use a scale of 10 mm representing 10 kN. (4)
- Taking the tie rod as PQ, determine:
 - the magnitude, direction and sense of the reaction at hinge H; (4)
 - the magnitude of the tension in the tie rod (PQ). (3)
- Taking the tie rod as RS, determine:
 - the magnitude, direction and sense of the reaction at hinge H; (4)
 - the magnitude of the tension in the tie rod (RS). (3)

(Total: 20 marks)

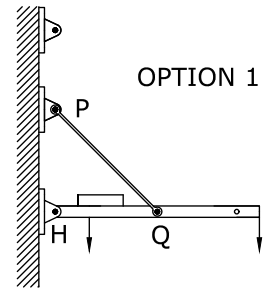


Figure 5a

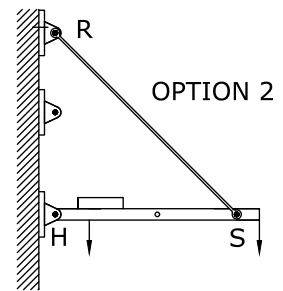


Figure 5b

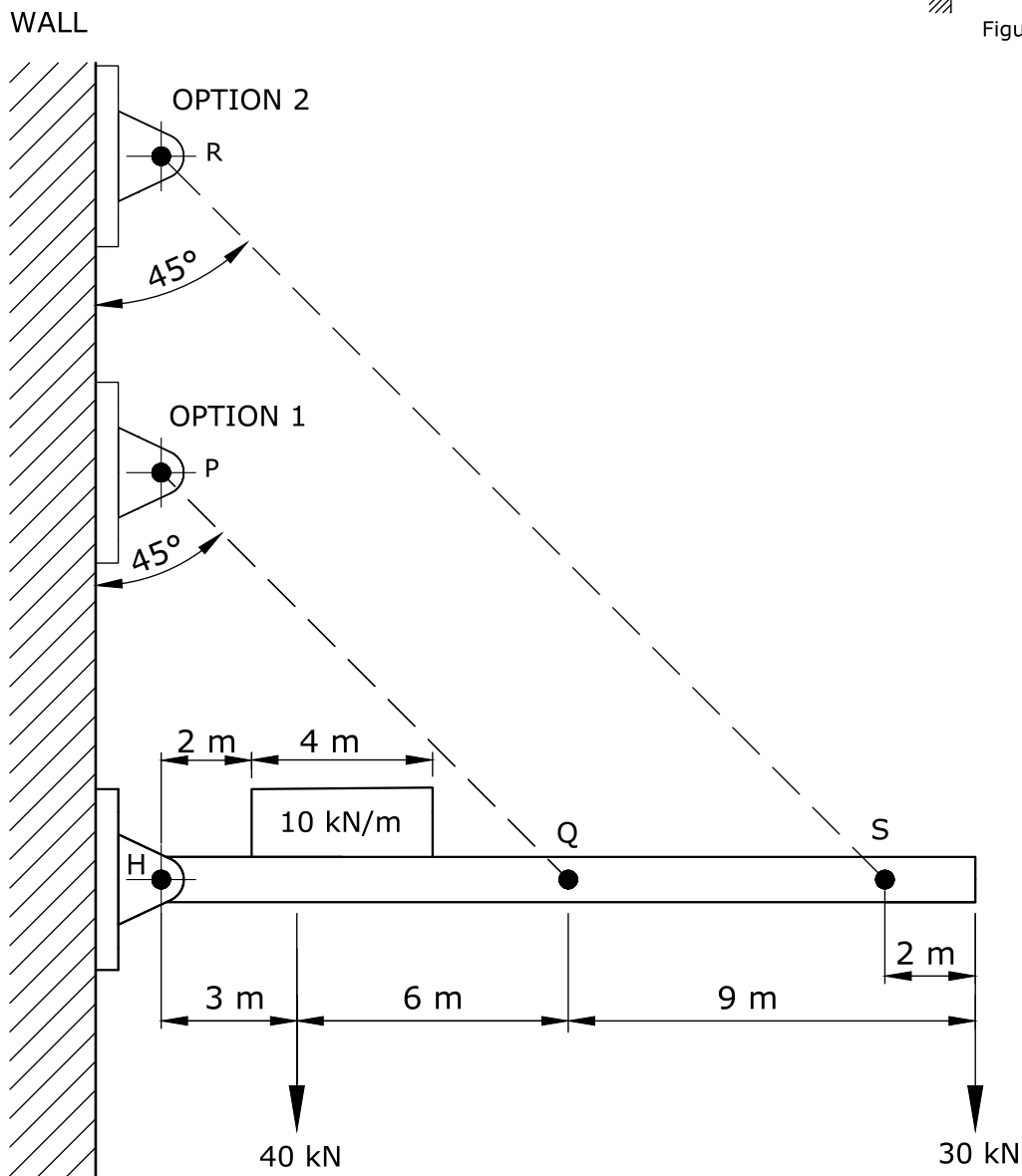


Figure 5c

Question 6.

Figure 6b shows orthographic views of two intersecting triangles ABC and DEF.

Figure 6a shows an isometric drawing of the projections of the front elevation and the plan on the vertical and horizontal planes respectively.

- Copy Figure 6b. (2)
- Project an auxiliary view to determine the intersections between the two triangles. (6)
- Complete the front elevation and plan by lining in with bold lines the visible parts of the triangles. (2)
- Show hidden detail in both views. (2)
- Copy full size the isometric drawing in Figure 6a. (2)
- Project isometrically the two triangles suspended between the vertical and horizontal planes. (2)
- Lightly shade the two isometric triangles showing clearly the intersecting points derived in subquestions c and d. (4)

Note:

Corner 'a' of triangle ABC has been given in Figure 6a.

(Total: 20 marks)

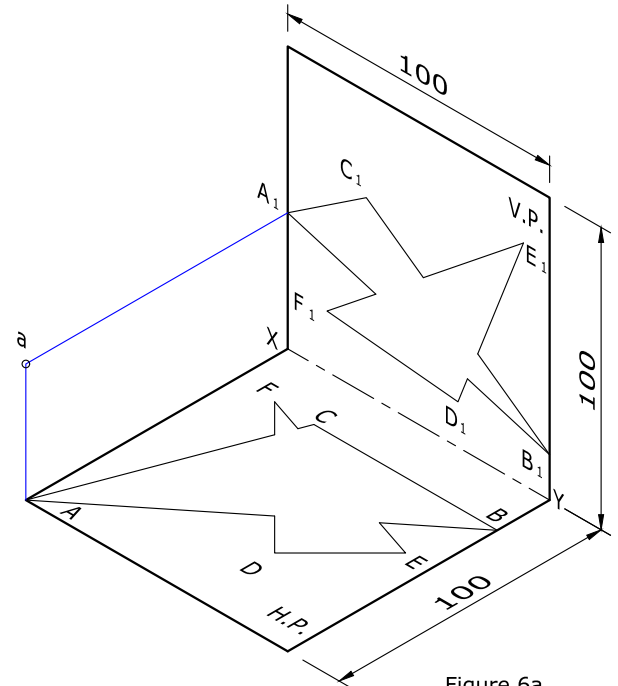


Figure 6a

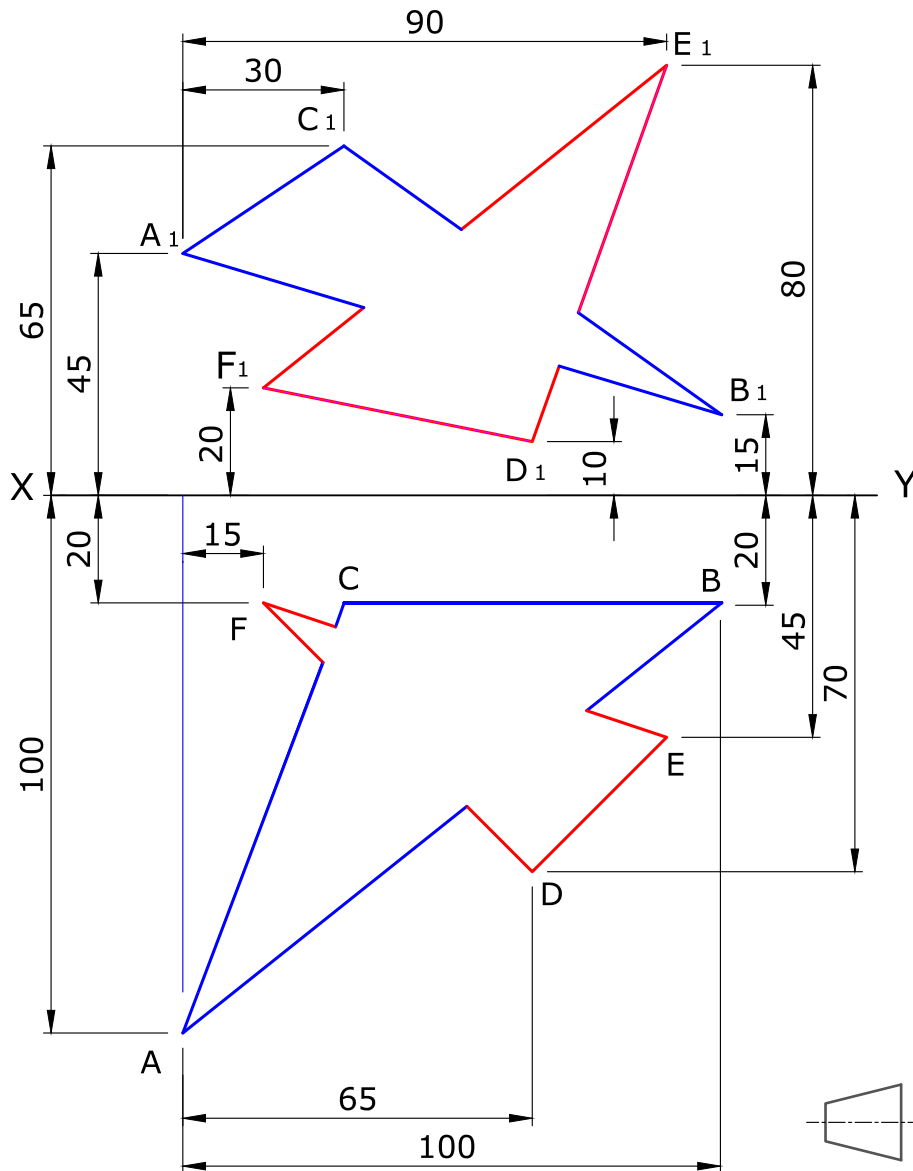


Figure 6b



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**ADVANCED MATRICULATION LEVEL
2026 FIRST SESSION**

SUBJECT:	Graphical Communication
PAPER NUMBER:	II
DATE:	18th May 2026
TIME:	4:00 p.m. to 7:05 p.m.

Directions to Candidates

Write your index number where indicated at the top of all drawing sheets.

Attempt all **FOUR** questions.

Programmable calculators **cannot** be used.

Unless otherwise stated:

- a. drawings should conform to B.S. or equivalent (ISO) standards;
- b. all dimensions are in millimetres;
- c. answers are to be accurately drawn with instruments;
- d. all construction lines must be left on each solution;
- e. drawing aids may be used.

Dimensions not given should be estimated.

Careful layout and presentation are important.

Marks will be awarded for accuracy, clarity and appropriateness of constructions.

Colour/shading should be used where appropriate.

Mark allocations are shown in brackets.

Question 1 carries 34 marks. Questions 2, 3, and 4 carry 22 marks **each**.

Question 1.

Figure 1 shows three orthographic views of the model for a villa. These orthographic views feature the proportion of every element in the model. Use this information to construct a two-point estimated perspective drawing of this villa. The arrows on the plan indicate the viewing direction.

- Using **THREE** preliminary sketches, explore alternative positions of the horizon line and identify the one which, in your opinion, best describes the spaciousness of the entire area. (3)
- Based on the choice made in part (a), use a suitable scale to produce the required illustration on a single side of an A2 size paper making the best use of the space available. (26)
- Enhance your drawing by colouring small areas of the different items appearing in your illustration. (5)

Notes:

- The windows and doors are stickers attached to the model. These should be rendered as black aluminium.
- The model is painted in acrylic. Choose any colours you deem suitable.

(Total: 34 marks)

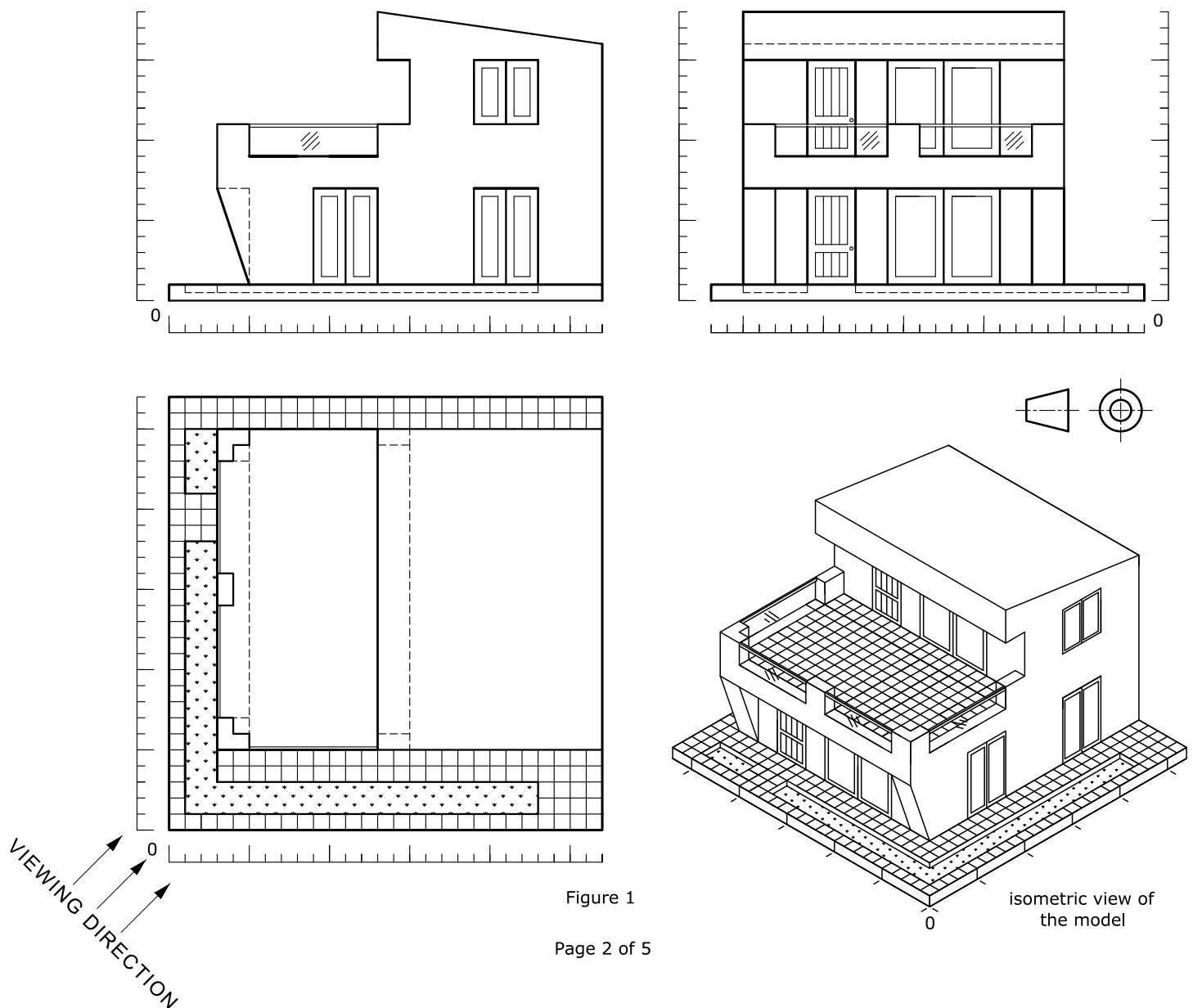


Figure 1

Question 2.

A multinational corporation is launching a new line of luxury watches. Design an advert spread on two adjacent pages in order to promote these luxury watches. The advert should convey a sense of exclusivity, sophistication, and timeless elegance.

Use appropriate typography that inspires a sense of wealth and prestige. The logo of the company is given in Figure 2a. Elements of this logo can be incorporated in the advert.



Figure 2a

- a. Written analysis
Identify, using keywords/short phrases, the main parameters of the design brief. (2)
- b. Graphical analysis
Based on your response to the written analysis, produce a series of preparatory sketches that illustrate your developing ideas. (4)
- c. Design synthesis
Clearly identify those elements present in your sketches that you intend to use in your final design. (2)
- d. Final realisation
Use colour and shading to produce your final realisation. (14)

Notes:

- Details of the page layout and the design space are shown in Figure 2b below.
- The fold line is shown for indication purposes only; where page 1 ends and page 2 begins.

(Total: 22 marks)

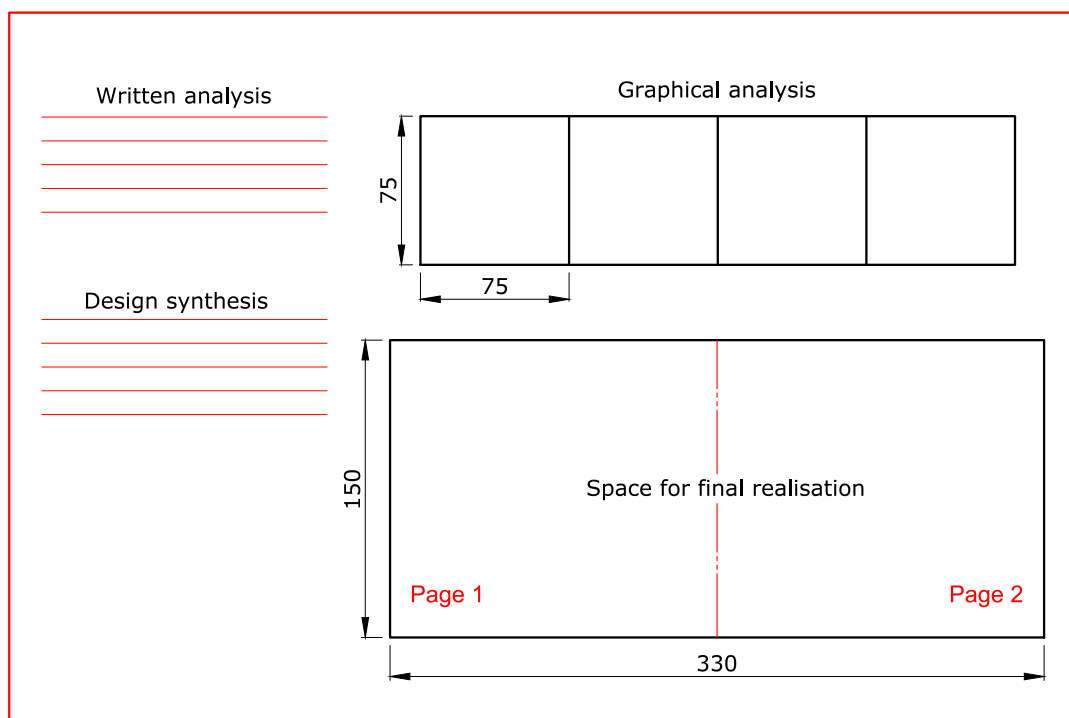
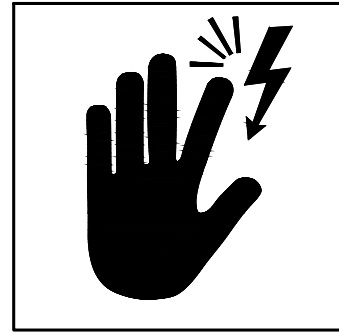


Figure 2b

Question 3.

A warehouse specializing in the storage and distribution of delicate electronic components needs to produce seven pictograms. These pictograms shall serve to communicate essential instructions and information across a diverse workforce, by being displayed through physical signage and equipment throughout the warehouse.

One of the pictograms, titled "Static discharge warning" indicating the risk of electrostatic discharge which can damage sensitive electronic components, is being given in Figure 3a.



pictogram for static discharge warning

Figure 3a

The information about the other six pictograms is given below.

- "Handle with care": indicating the fragile nature of the electronic components.
- "Authorized personnel only": restricting access to sensitive or hazardous areas.
- "Automated robot in operation": warning of moving robotic machinery.
- "Emergency stop": signifying the location of the emergency shutdown button.
- "Do not stack": indicating that items should not be stacked in a particular area.
- "Maximum load": indicates the maximum weight a shelf or floor can hold.

Using the designated spaces:

- draw the preliminary sketches illustrating the developing ideas; (4)
- draw the final version of the six pictograms. (18)

Specifications:

- Only** the pictograms should be drawn. Conventional geometric shapes and colours denoting safety signs should be ignored.
- Use only black and white for the pictograms. (Consider the effectiveness of positive and negative space).
- Each pictogram must be designed within a square of 80 mm x 80 mm.
- The pictograms must be clear, concise, and easily recognizable at a glance.
- It is suggested that you divide your A2 sheet as shown in figure 3b below.

(Total: 22 marks)

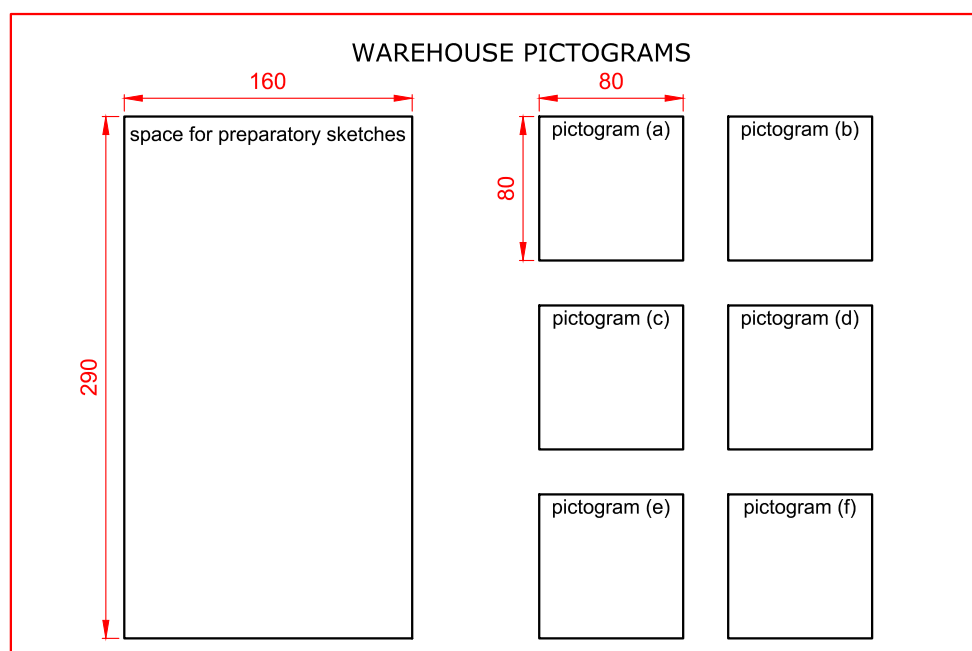


Figure 3b

Question 4.

Three orthographic views of a toy bulldozer are shown in Figure 4.

- a. Make a well-proportioned pictorial (3D) freehand drawing of this toy bulldozer, placing corner C in the lowermost position. (14)
- b. Colour and shade the drawing using the following instructions: (8)
 - main body - durable plastic (yellow and white)
 - tyres - rubber (black)
 - front and side windows - reflective stickers

(Total: 22 marks)

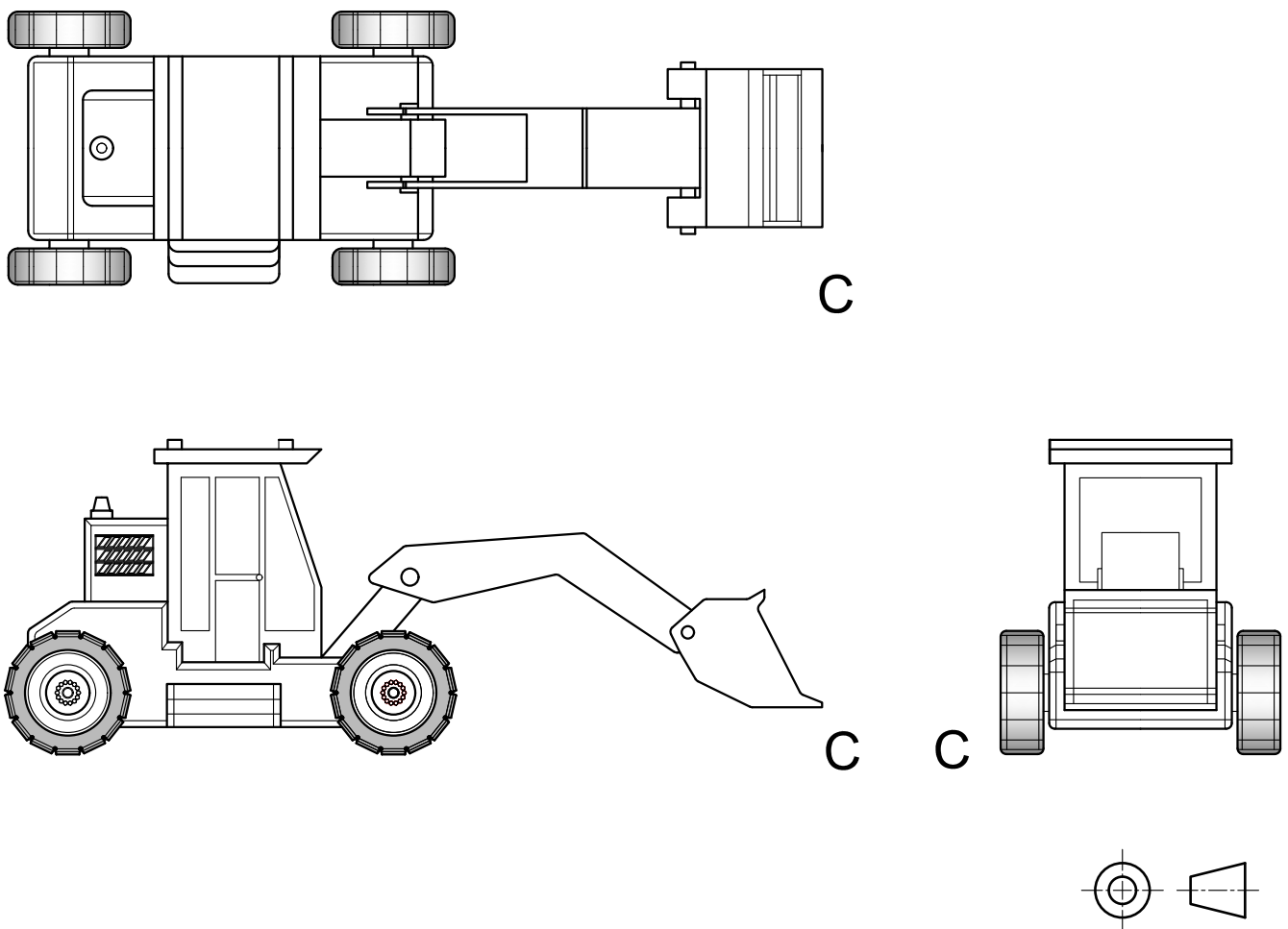


Figure 4

