4.21 DRAWING AND DESIGN (449)

4.21.1 Drawing and Design Paper 1 (449/1)

1. (a) TIVET - Technical Vocational Education Training.
NITA - National Industrial Training Authority.
TTI - Technical Training Institute.
(3 x 1 = 3 marks)

(b) Uses of a beam compass:

- Drawing circles and arcs of very large radii.
- Stepping off large distances. (2 x 1 = 2 marks)

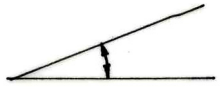
2. (a) Terms in the design process:

- Primary objective is the functionality of a design solution or a workable solution.
- Secondary objective refers to value addition, eg. comfort, aesthetics etc.
- Design brief refers to the narration of the problem solution.
- Prototype is the model or sample of the finished product.

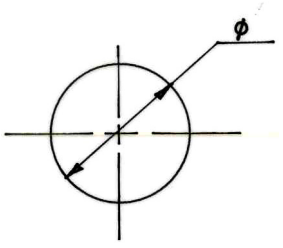
(4 x 1 = 4 marks)

(b) Types of dimensions

Linear dimensions



Angular dimensions



Circular dimensions

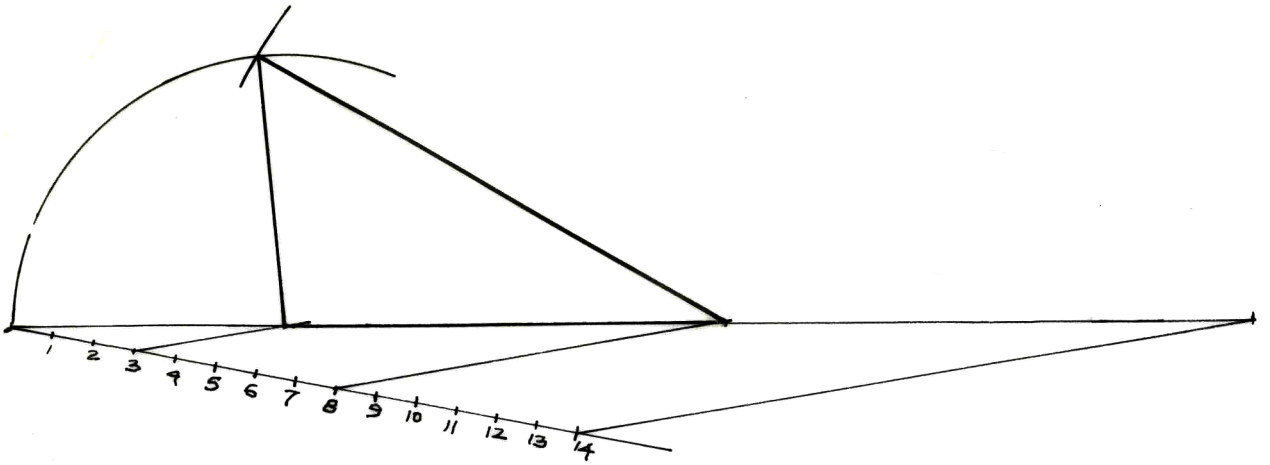
(3 x 1 = 3 marks)

3. (a) Uses of:

Key board	-	for typing/keying in information and giving commands.
Mouse	-	For giving commands.
Monitor	-	To display whatever is going on or taking place in the computer.
Hard disk	-	For storage of information i.e. primary storage media.

(4 x $\frac{1}{2}$ = 2 marks)

4.



Drawing and measuring 165mm = 1/2
Dividing the line into 14 equal parts= 1
Determing 3 5 & 6 = 14 = 1/2
Identify 3 5 6 portions = 11/2
Joining the points = 1/2
= 4 marks

5. (a) Factors to consider when lettering:

- Use of guidelines to give uniformity.
- Proportional and equal spacing of letters and numerical.
- Uniform strength/outline of letters and numerical.
- Consistency in style i.e. italic or gothic.
- Ascending and descending for lower case letters.
- Proportionality with the paper size.

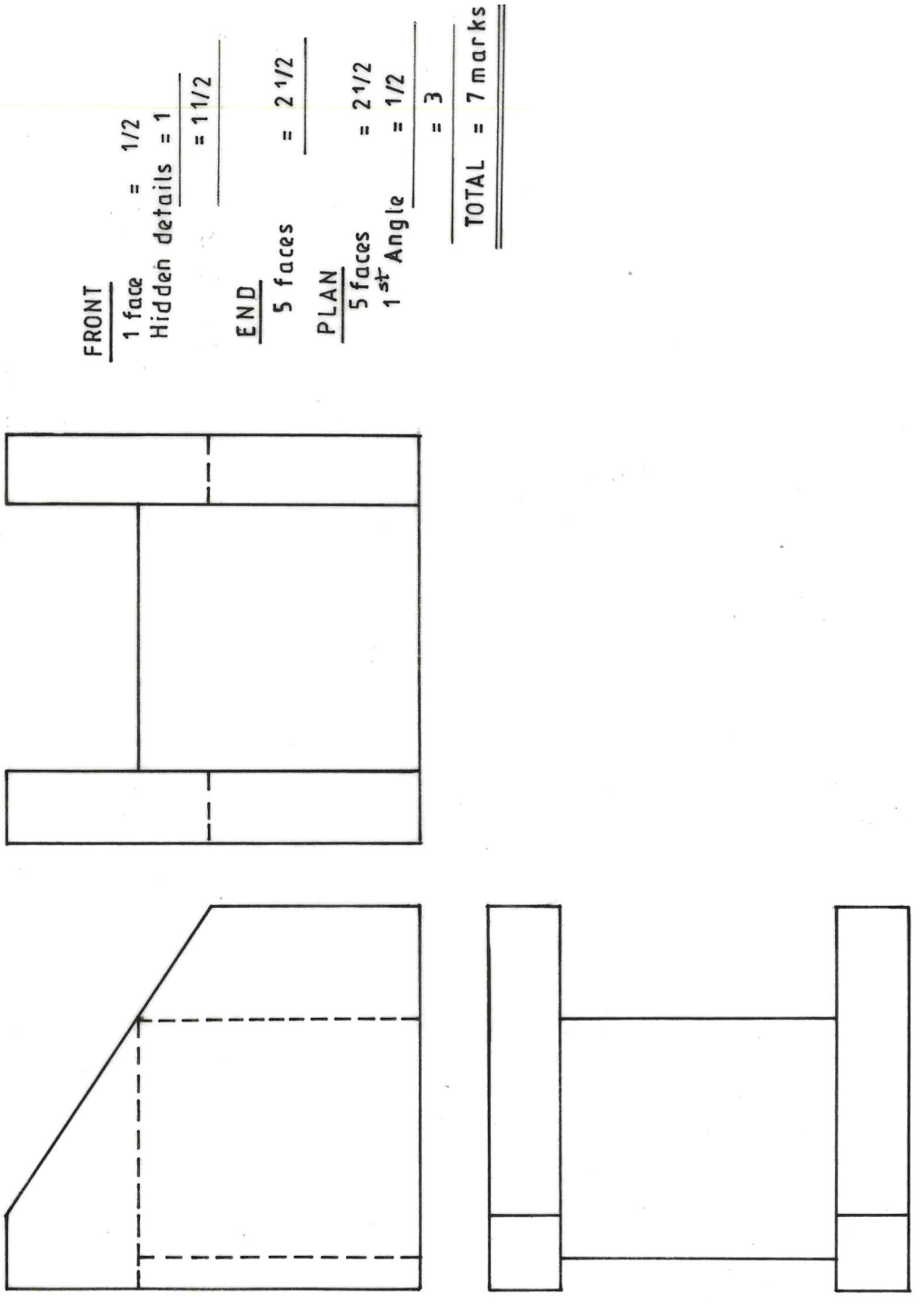
(Any 4 x $\frac{1}{2}$ = 2 marks)

(b) Effects of poor disposal of eng. materials.

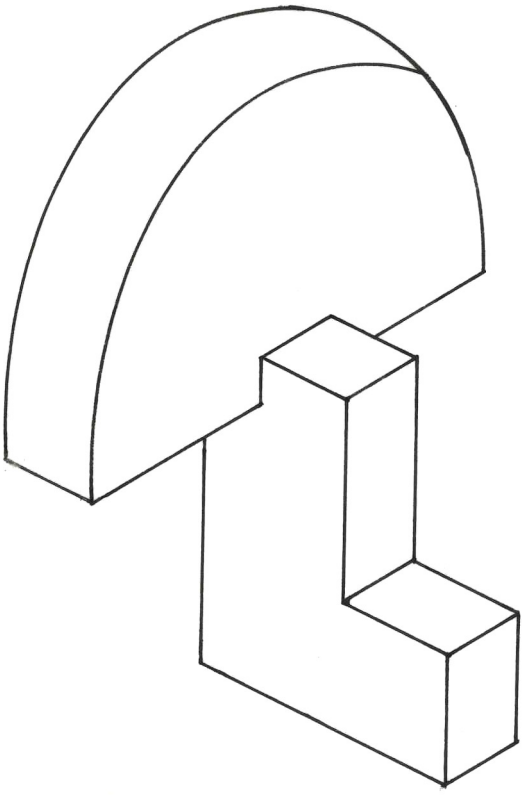
- Global warming.
- Harmful to the soil.
- Harmful to the aquatic life.
- Unsightly environment.

(Any 3 x 1 = 3 marks)

6.


FRONT
1 face = 1/2
Hidden details = 1
= 1 1/2
END
5 faces = 2 1/2
PLAN
5 faces = 2 1/2
1st Angle = 1/2
= 3
TOTAL = 7 marks

7.



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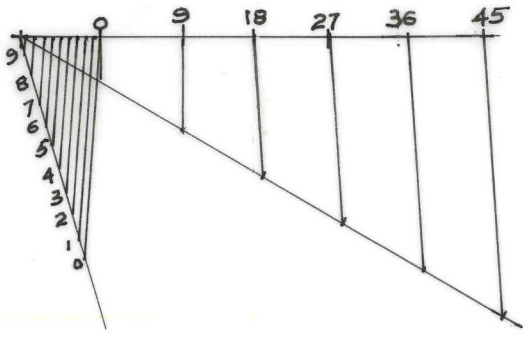
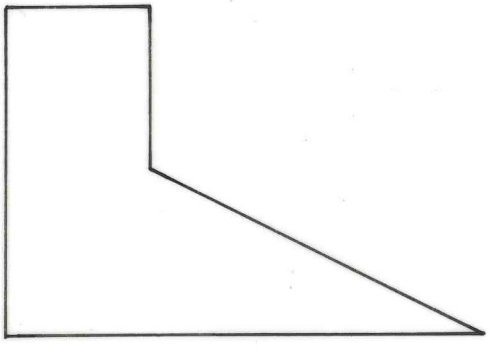
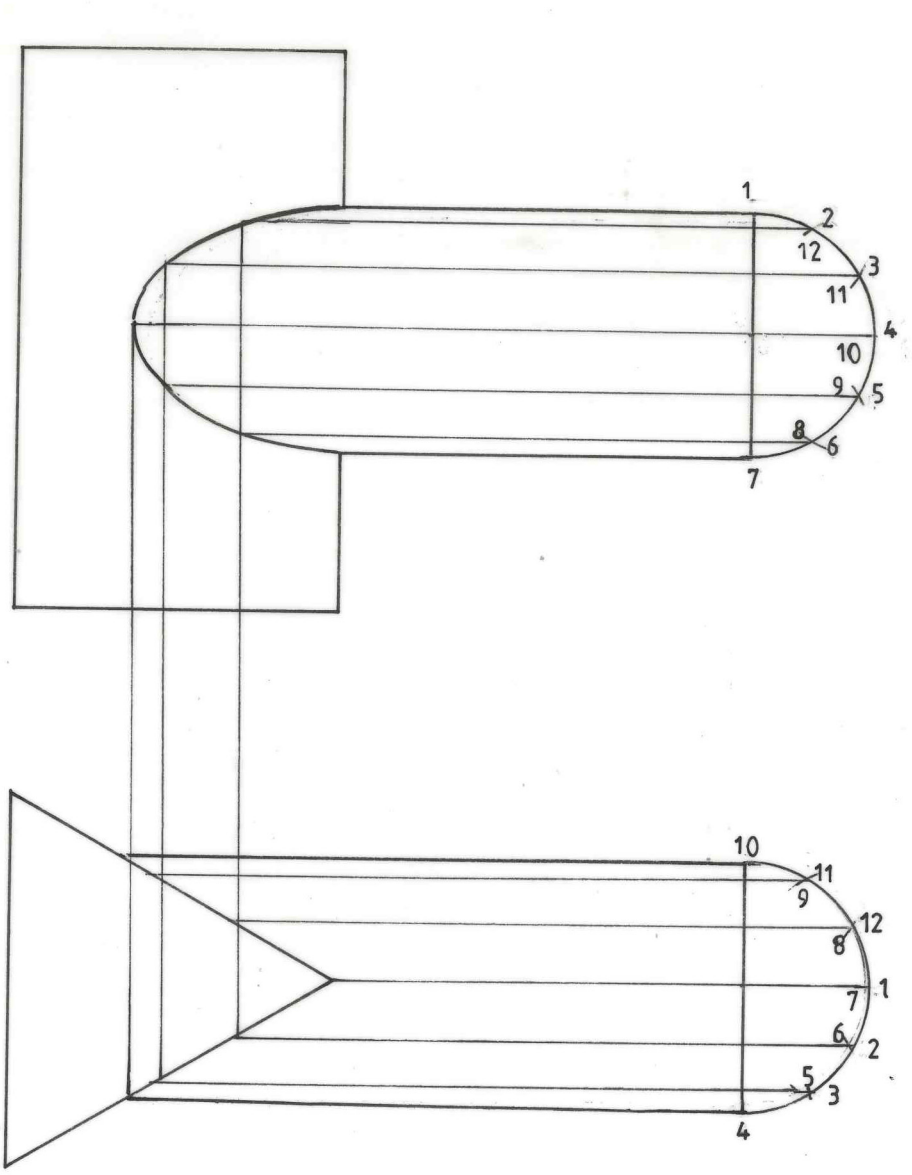




PLANE SCALE:

Main readings	=	1
Scale readings	=	1
Maximum reading	=	1
Application (drawing)	=	2
	=	5 marks

9.



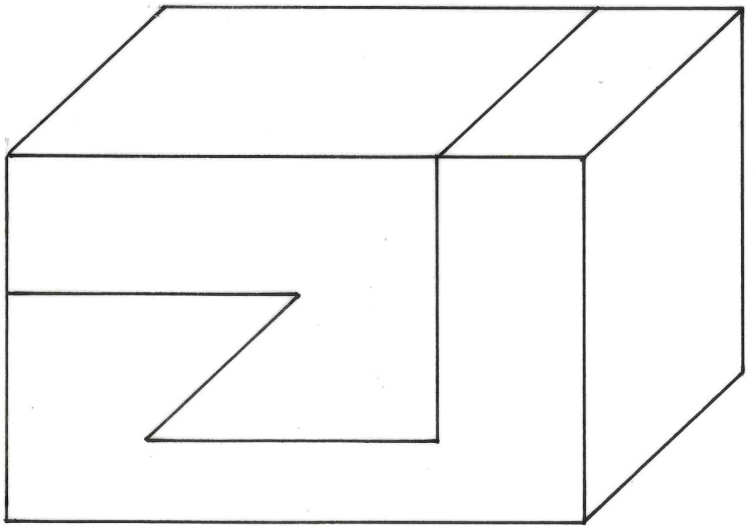
Front Elevation

Construction of circle or semi-circle	1 mark
Correct projection to the prism	$\frac{1}{2}$ mark
Plotting the points on the prism	1 mark
Smooth curve	1 mark
	$3\frac{1}{2}$ marks

Plan

Construction of circle or semi-circle	1 mark
Correct projection the prism	$\frac{1}{2}$ mark
	$1\frac{1}{2}$ marks
Total	**5 marks**

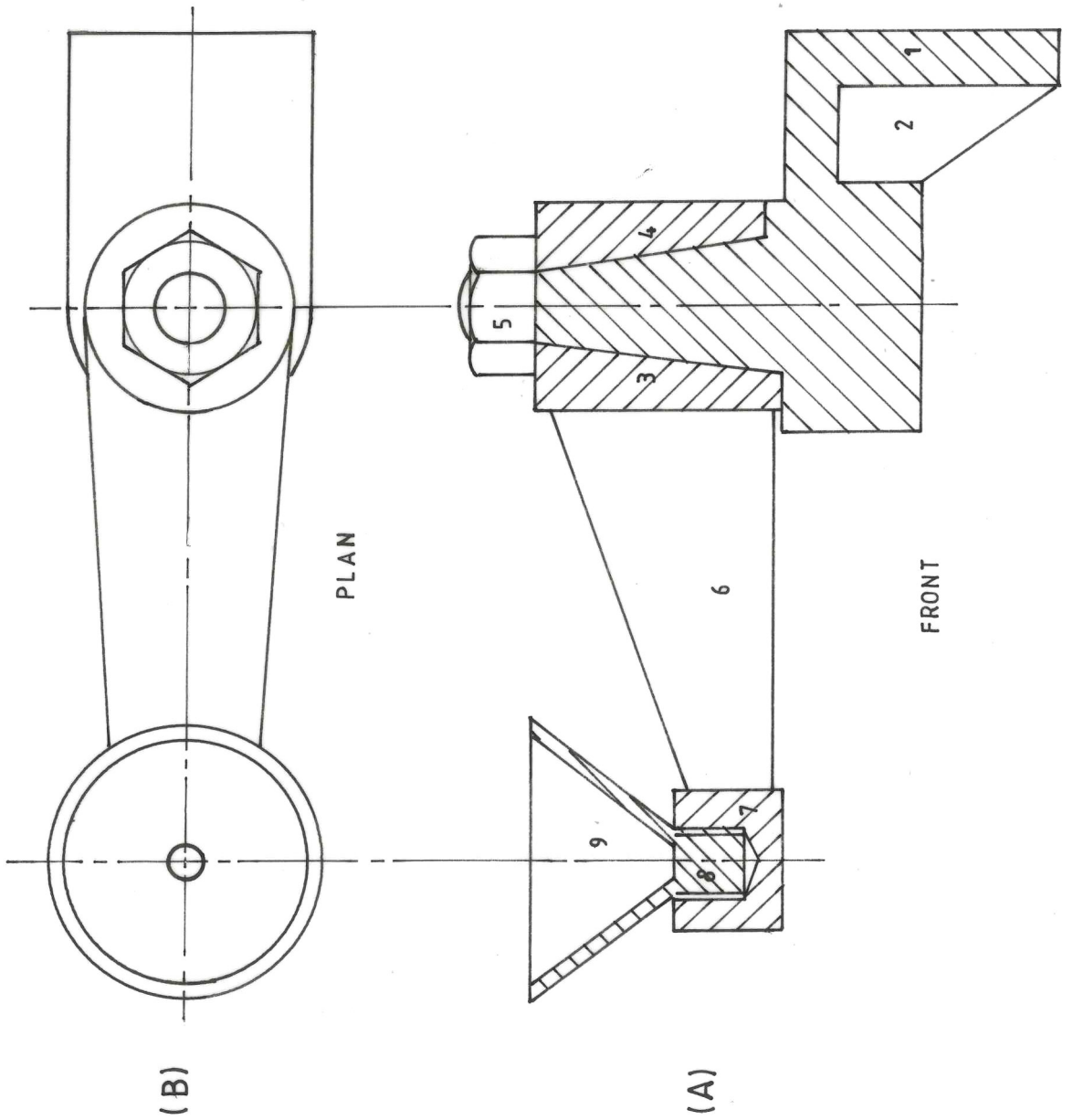
10.



5 faces @ 1/2	= 2 1/2
Oblique	= 1
Proportionality	= 1/2
	= 4 marks

Accept alternative direction of viewing

11.



FRONT VIEW

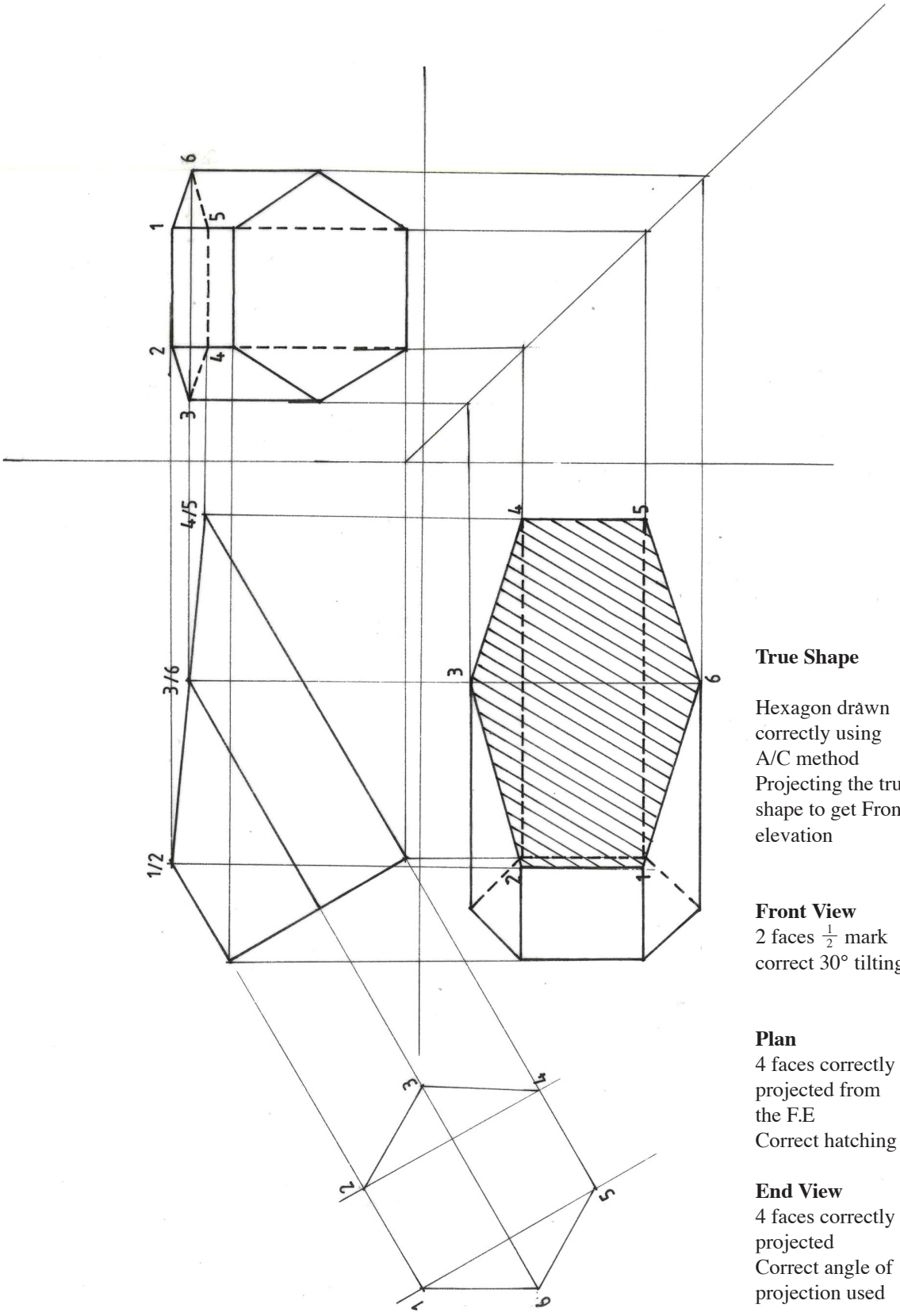
Faces	9 × 1	= 9
Section	5 × 1/2	= 2 1/2
		= 11 1/2

PLAN

Faces	8 × 1	= 8
Linework		= 1/2
		= 8 1/2

TOTAL = 20 marks

12.



True Shape

Hexagon drawn correctly using A/C method	3 marks
Projecting the true shape to get Front elevation	$\frac{1}{2}$ mark
	$3\frac{1}{2}$ marks

Front View

2 faces $\frac{1}{2}$ mark	1 mark
correct 30° tilting	$\frac{1}{2}$ mark
	1$\frac{1}{2}$ mark

Plan

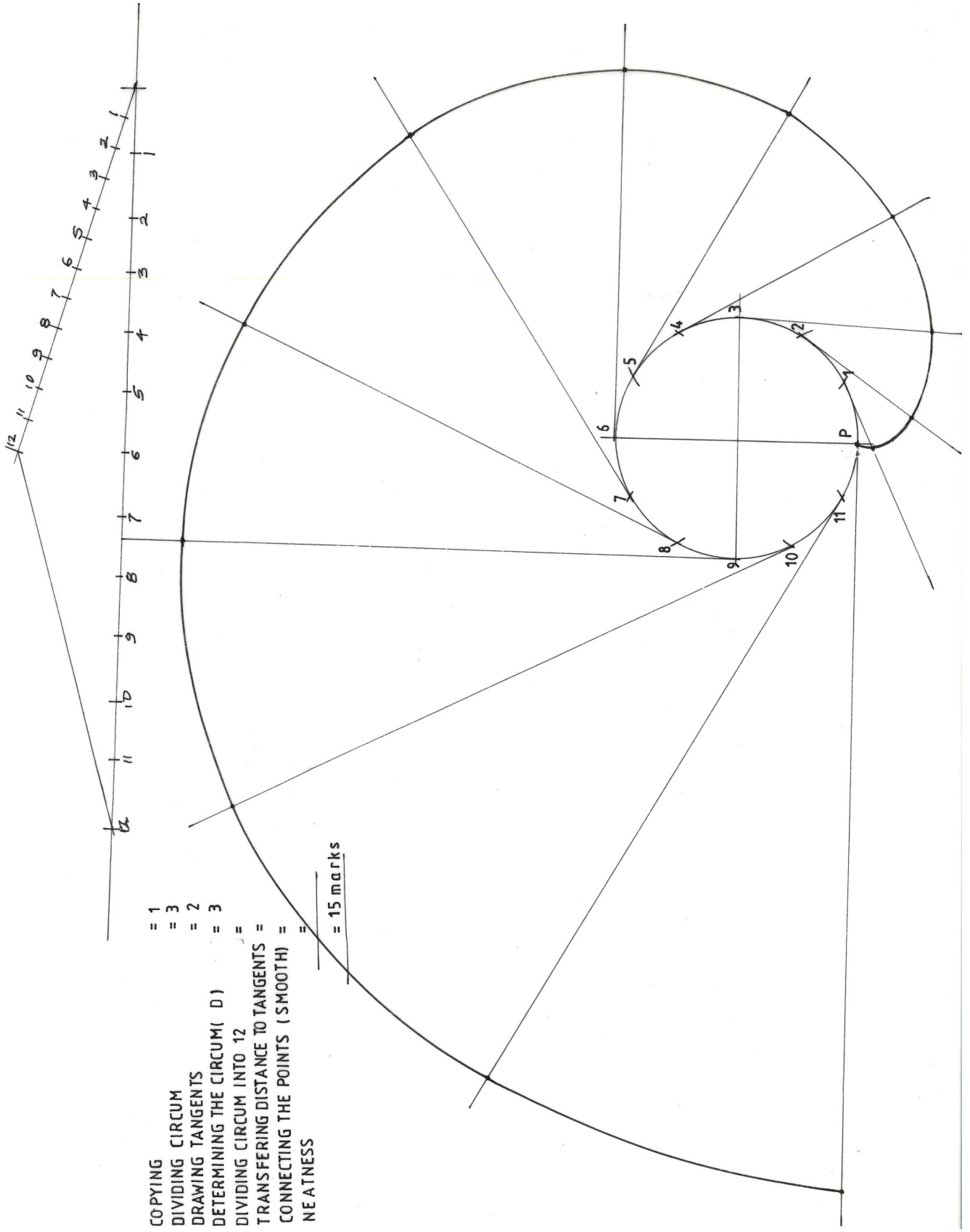
4 faces correctly projected from the F.E	4 marks
Correct hatching	1 mark
	5 marks

End View

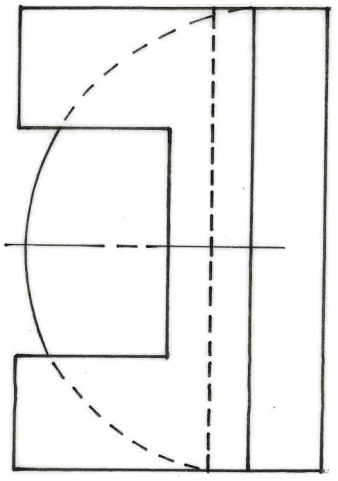
4 faces correctly projected	4 marks
Correct angle of projection used	1 mark
	5 marks

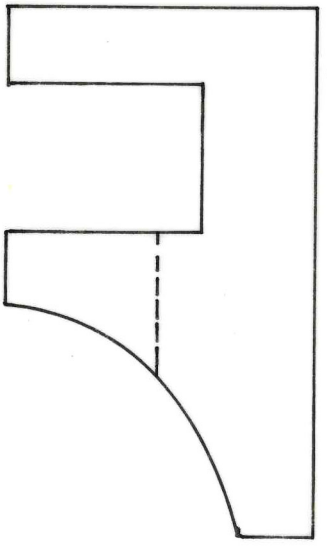
Total **15 marks**

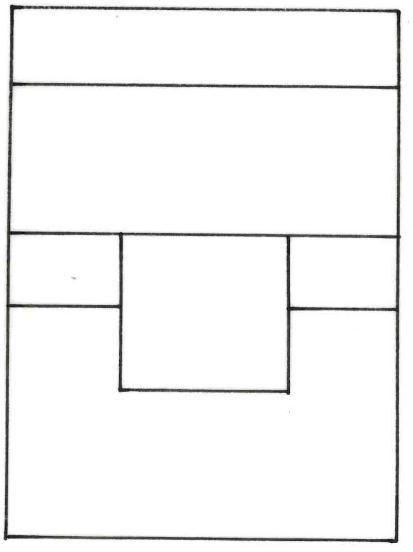
13.


COPYING = 1
DIVIDING CIRCUM = 3
DRAWING TANGENTS = 2
DETERMINING THE CIRCUM(D) = 3
DIVIDING CIRCUM INTO 12 =
TRANSFERING DISTANCE TO TANGENTS =
CONNECTING THE POINTS (SMOOTH) =
NEATNESS =
= 15 marks
P

14.







ELE

FRONT
- Face = 1
- Curve = 1
- Hidden detail = 1/2

PLAN
- Faces 6×1 = 6

END
- Faces 3×1 = 3
- Hidden details 3×1/2 = 11/2
- 1st Angle = 1
- Linework = 1

TOTAL = 15 marks