

# higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

# **MARKING GUIDELINE**

# NATIONAL CERTIFICATE ENGINEERING DRAWING N3

5 August 2021

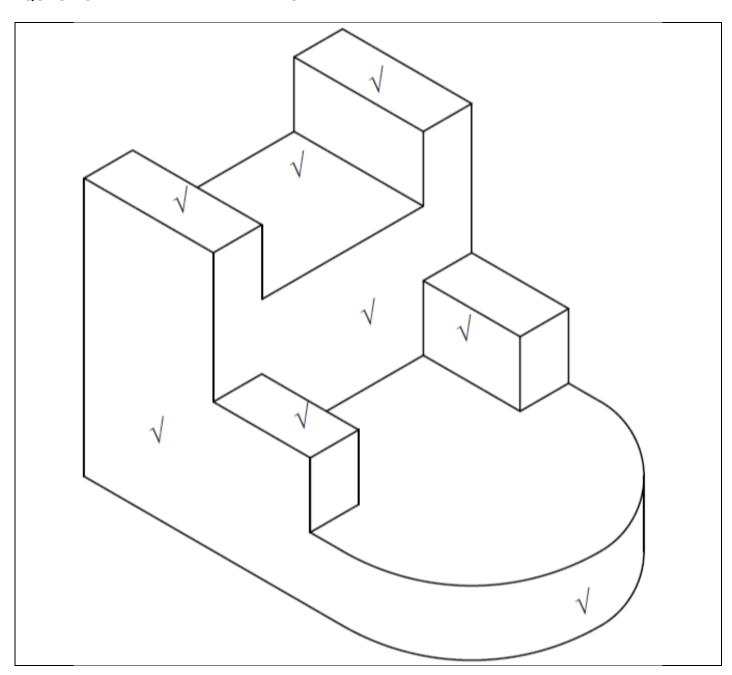
This marking guideline consists of 11 pages.

#### -2-ENGINEERING DRAWING N3

#### **INSTRUCTIONS AND INFORMATION**

- 1. Copying and scanning of drawings will affect the accuracy of the drawings on the marking guideline.
- 2. All markers must prepare their own marking guideline to use during the marking of candidates' drawings.

#### **QUESTION 1: FREEHAND DRAWING**



[10]

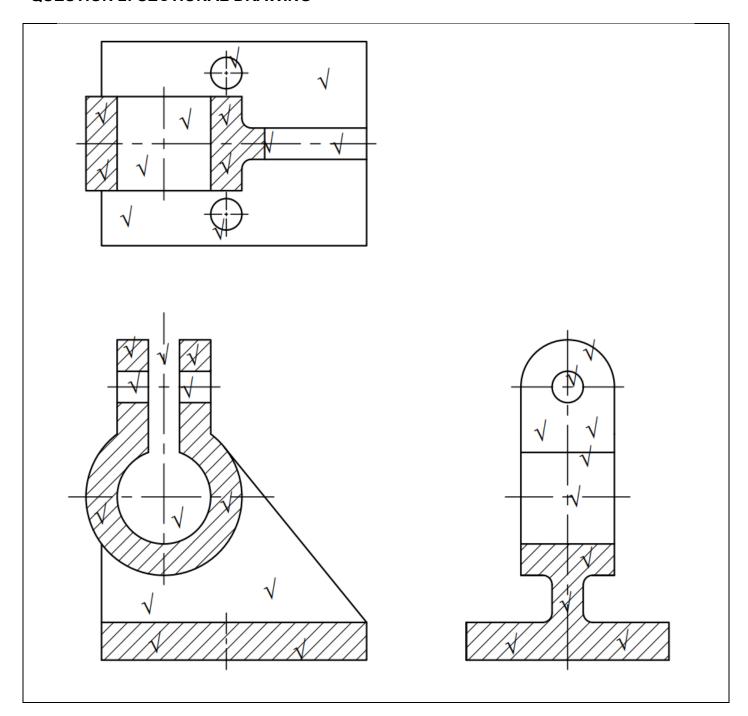
MARK ALLOCATION	
Correctness	4
Line work	3
Accuracy and proportion	3
TOTAL:	[10]

#### MARK ALLOCATION FOR CORRECTNESS - QUESTION 1

½ mark for each of the areas indicated in the marking guideline

4 marks

#### **QUESTION 2: SECTIONAL DRAWING**



[25]

MARK ALLOCATION	
Correctness:	
FSFV	6
FSRV	5
FSTV	6
Line work	3
Accuracy	3
Layout and neatness	2
TOTAL:	25

#### **MARK ALLOCATION FOR CORRECTNESS – QUESTION 2**

#### **FSFV**

3	marks for correct sectioning	3	marks
1	mark for the web not sectioned	1	mark
1/2	mark for the Ø 30 hole not sectioned	1/2	mark
1/2	mark for the gap	1/2	mark
1/2	mark for each Ø10 hole not sectioned	1	mark
	TOTAL	6	marks

#### **FSRV**

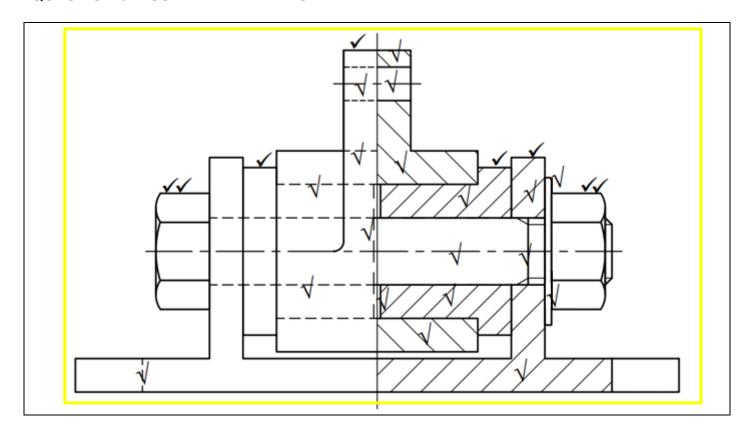
2	marks for correct sectioning	2	marks
1/2	mark for the Ø 30 hole not sectioned	1/2	mark
1/2	mark for the line indicating the top of the Ø30 hole	1/2	mark
1/2	mark for the Ø 10 hole not sectioned	1/2	mark
1/2	mark for drawing the R15 arc	1/2	mark
1	mark for not sectioning the portion above the Ø30 hole	1	mark
	TOTAL	5	marks

## **FSTV**

2	marks for correct sectioning	2	marks
1	mark for the Ø30 hole not sectioned	1	mark
1/2	mark for each Ø10 hole not sectioned	1	mark
1	mark for the base not sectioned	1	mark
1/2	mark for line indicating the edge of the cutting plane on the rib	1/2	mark
1/2	mark for the portion of the rib not sectioned	1/2	mark
	TOTAL	6	marks

#### -6-ENGINEERING DRAWING N3

#### **QUESTION 3: ASSEMBLY DRAWING**



[30]

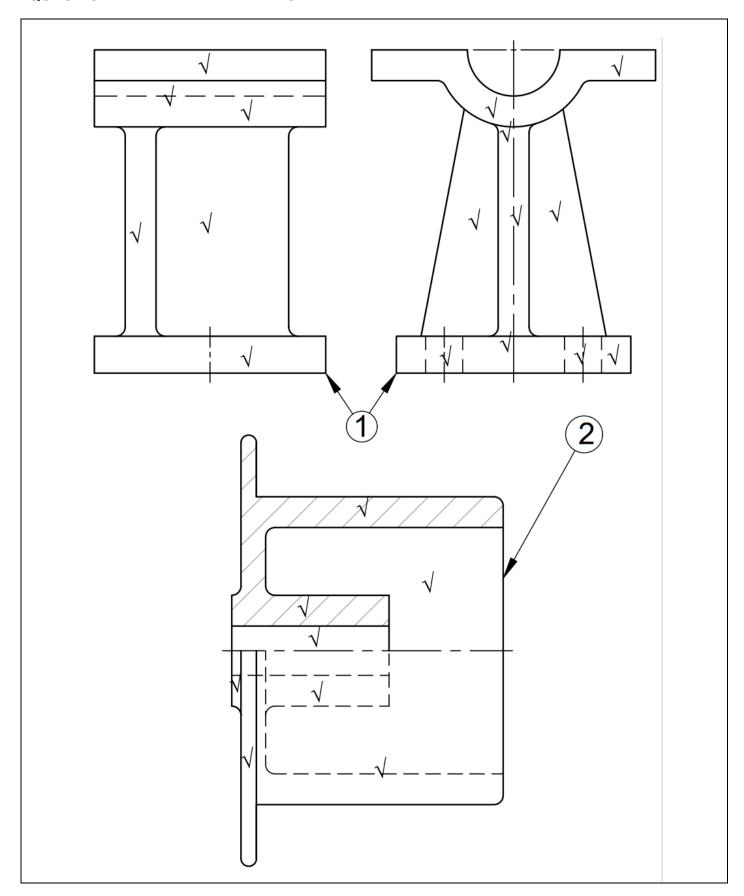
MARK ALLOCATION	
Correctness	18
Line work	5
Accuracy	5
Layout and neatness	2
TOTAL:	30

## ENGINEERING DRAWING N3

#### MARK ALLOCATION FOR CORRECTNESS - QUESTION 3

item 4 mark for the Item 4 correctly assembled  item 1  1½ marks for correct sectioning 2½ mark for the slot not sectioned 3½ mark for the outside edge shown as hidden detail (between the protruding part) 3½ mark for both inside edges shown as hidden detail 3½ mark for both inside edges shown as hidden detail 3½ mark 3½ mark for the slot shown as hidden detail 3½ mark 3½ mark for the slot shown as hidden detail 3½ mark 3½ mark for the slot not sectioned 3½ mark 3½ mark for the slot shown as hidden detail 3½ mark 3½ mark for the slot shown as hidden detail 3½ mark 3½ mark for the gap between the Item 3s 3½ mark for the gap between the Item 3s 3½ mark for drawing the edge of Item 3 as hidden detail (vertical line)  item 4  ½ mark for not sectioning the washer  item 5  1 mark for correctly drawing the bolt head 1 mark 3½ mark for not sectioning the bolt 3½ mark for drawing the threaded portion 4½ mark for drawing the bolt as hidden detail 3½ mark 4½ mark for showing the bolt as hidden detail 4½ mark 4½ mark for correctly drawing the nut 1 mark 4½ mark for correctly drawing the nut 1 mark 4½ mark for correctly drawing the nut 1 mark 4 mark for correctly drawing the nut 1 mark	1	mark for each of item correctly assembled (2 x Item 3), except	<mark>6</mark>	<mark>marks</mark>
Item 1  1½ marks for correct sectioning ½ mark for the slot not sectioned ½ mark for the outside edge shown as hidden detail (between the protruding part) ½ mark for both inside edges shown as hidden detail ½ mark for the slot shown as hidden detail ½ mark ½ mark for the slot shown as hidden detail ½ mark ½ mark for the slot shown as hidden detail  1 mark for correct sectioning 1 mark ½ mark for the slot not sectioned ½ mark ½ mark ½ mark for the slot shown as hidden detail ½ mark ½ mark for the slot shown as hidden detail ½ mark ½ mark for the slot shown as hidden detail ½ mark ½ mark for drawing the edge of Item 3 1 mark for correctly sectioning Item 3 1 mark for drawing the edge of Item 3 as hidden detail (vertical line)  Item 4 ½ mark for not sectioning the washer  Item 5 1 mark for correctly drawing the bolt head 1 mark ½ mark for not sectioning the bolt ½ mark ½ mark for orrectly drawing the bolt head 1 mark ½ mark for drawing the threaded portion ½ mark ½ mark ½ mark for showing the bolt as hidden detail  Item 6 1 mark for correctly drawing the nut 1 mark		item 4		
1½ marks for correct sectioning ½ mark for the slot not sectioned ½ mark for the outside edge shown as hidden detail (between the protruding part) ½ mark for both inside edges shown as hidden detail ½ mark ½ mark for the slot shown as hidden detail ½ mark ½ mark for the slot shown as hidden detail ½ mark ½ mark for the slot shown as hidden detail ½ mark ½ mark for the slot not sectioned ½ mark for the slot shown as hidden detail ½ mark ½ mark for the slot shown as hidden detail ½ mark ½ mark for the slot shown as hidden detail  litem 3  1 mark for correctly sectioning Item 3 ½ mark for the gap between the Item 3s ½ mark for drawing the edge of Item 3 as hidden detail (vertical line)  litem 4 ½ mark for not sectioning the washer  litem 5  1 mark for correctly drawing the bolt head ½ mark for not sectioning the bolt ½ mark ½ mark for drawing the threaded portion ½ mark ½ mark for showing the bolt as hidden detail ½ mark litem 6 1 mark for correctly drawing the nut 1 mark	<mark>1/2</mark>	mark for the Item 4 correctly assembled	<mark>1/2</mark>	mark
1½ marks for correct sectioning ½ mark for the slot not sectioned ½ mark for the outside edge shown as hidden detail (between the protruding part) ½ mark for both inside edges shown as hidden detail ½ mark ½ mark for the slot shown as hidden detail ½ mark ½ mark for the slot shown as hidden detail ½ mark ½ mark for the slot shown as hidden detail ½ mark ½ mark for the slot not sectioned ½ mark for the slot shown as hidden detail ½ mark ½ mark for the slot shown as hidden detail ½ mark ½ mark for the slot shown as hidden detail  litem 3  1 mark for correctly sectioning Item 3 ½ mark for the gap between the Item 3s ½ mark for drawing the edge of Item 3 as hidden detail (vertical line)  litem 4 ½ mark for not sectioning the washer  litem 5  1 mark for correctly drawing the bolt head ½ mark for not sectioning the bolt ½ mark ½ mark for drawing the threaded portion ½ mark ½ mark for showing the bolt as hidden detail ½ mark litem 6 1 mark for correctly drawing the nut 1 mark	ltom '	1		
½ mark for the slot not sectioned ½ mark   ½ mark for the outside edge shown as hidden detail (between the protruding part) ½ mark for both inside edges shown as hidden detail ½ mark   ½ mark for the slot shown as hidden detail ½ mark   ½ mark for the slot shown as hidden detail ½ mark   ½ mark for the slot not sectioning 1 mark   ½ mark for the slot shown as hidden detail ½ mark   ½ mark for the slot shown as hidden detail ½ mark   ½ mark for the slot shown as hidden detail ½ mark   ½ mark for the slot shown as hidden detail ½ mark   ½ mark for the slot shown as hidden detail ½ mark   ½ mark for the slot shown as hidden detail ½ mark   ½ mark for drawing the edge of Item 3 1 mark   ½ mark for drawing the edge of Item 3 as hidden detail (vertical line) ½ mark   Item 4 ½ mark for not sectioning the washer ½ mark   Item 5 1 mark for correctly drawing the bolt head 1 mark   ½ mark for drawing the threaded portion ½ mark   ½ mark for showing the bolt as hidden detail ½ mark   Item 6 1 mark for correctly drawing the nut 1 mark			11/	marke
mark for the outside edge shown as hidden detail (between the protruding part)  mark for both inside edges shown as hidden detail  mark for the slot shown as hidden detail  mark for correct sectioning  mark for the slot not sectioned  mark for the slot shown as hidden detail  mark for the slot not sectioned  mark for the slot shown as hidden detail  mark for drawing the edge of Item 3 as hidden detail (vertical line)  mark  mark for not sectioning the washer  mark  mark for not sectioning the bolt head  mark for not sectioning the bolt head  mark for orrectly drawing the bolt head  mark for drawing the threaded portion  mark  mark for drawing the threaded portion  mark  mark for correctly drawing the bolt as hidden detail  mark  mark  mark  mark  mark  mark  mark				
the protruding part)  ½ mark for both inside edges shown as hidden detail  ½ mark  ½ mark for the slot shown as hidden detail  ½ mark  Item 2  1 mark for correct sectioning  1 mark  ½ mark for the slot not sectioned  ½ mark  ½ mark for the slot shown as hidden detail  ½ mark  ½ mark  ½ mark  ½ mark  Item 3  1 mark for correctly sectioning Item 3  1 mark for the gap between the Item 3s  ½ mark for drawing the edge of Item 3 as hidden detail (vertical line)  Item 4  ½ mark for not sectioning the washer  Item 5  1 mark for correctly drawing the bolt head  ½ mark for not sectioning the bolt  ½ mark  ½ mark for drawing the threaded portion  ½ mark  ½ mark for showing the bolt as hidden detail  ½ mark  Item 6  1 mark for correctly drawing the nut  1 mark				
Item 2  1 mark for correct sectioning 2 mark for the slot not sectioned 3 mark for the slot shown as hidden detail  Item 3  1 mark for correctly sectioning Item 3 2 mark for the gap between the Item 3s 3 mark for drawing the edge of Item 3 as hidden detail (vertical line)  Item 4  1 mark for correctly drawing the bolt head 2 mark for not sectioning the bolt 3 mark for or or sectioning the bolt 4 mark for not sectioning the bolt 5 mark for or sectioning the bolt 6 mark for showing the bolt as hidden detail 1 mark 1 mark 2 mark 3 mark 4 mark 5 mark 6 mark for correctly drawing the bolt head 1 mark	/2	· · · · · · · · · · · · · · · · · · ·	/2	mark
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1 mark for correct sectioning 1 mark 1/2 mark for the slot not sectioned 1/2 mark 1/	1/2	mark for the slot shown as hidden detail	1/2	mark
½ mark for the slot not sectioned ½ mark   ½ mark for the slot shown as hidden detail ½ mark   Item 3 1 mark for correctly sectioning Item 3 1 mark   ½ mark for the gap between the Item 3s ½ mark   ½ mark for drawing the edge of Item 3 as hidden detail (vertical line) ½ mark   Item 4 ½ mark for not sectioning the washer ½ mark   Item 5 1 mark for correctly drawing the bolt head 1 mark   ½ mark for not sectioning the bolt ½ mark   ½ mark for drawing the threaded portion ½ mark   ½ mark for showing the bolt as hidden detail ½ mark   Item 6 1 mark for correctly drawing the nut 1 mark	Item 2	2		
Item 3  1 mark for correctly sectioning Item 3 1 mark for the gap between the Item 3s 1/2 mark for drawing the edge of Item 3 as hidden detail (vertical line)  Item 4  1/2 mark for not sectioning the washer  Item 5 1 mark for correctly drawing the bolt head 1/2 mark for not sectioning the bolt 1/2 mark for not sectioning the bolt 1/2 mark for showing the bolt as hidden detail 1/2 mark 1/2 mark for drawing the bolt as hidden detail 1/2 mark 1/2 mark 1/2 mark for drawing the bolt as hidden detail 1/2 mark	1	mark for correct sectioning	1	mark
Item 3  1 mark for correctly sectioning Item 3 1 mark 1/2 mark for the gap between the Item 3s 1/2 mark for drawing the edge of Item 3 as hidden detail (vertical line)  Item 4 1/2 mark for not sectioning the washer  Item 5 1 mark for correctly drawing the bolt head 1 mark 1/2 mark for not sectioning the bolt 1 mark for drawing the bolt 1 mark for drawing the threaded portion 1/2 mark 1/2 mark for showing the bolt as hidden detail 1 mark 1/2 mark	1/2	mark for the slot not sectioned	1/2	mark
1 mark for correctly sectioning Item 3 ½ mark for the gap between the Item 3s ½ mark for drawing the edge of Item 3 as hidden detail (vertical line)    tem 4	1/2	mark for the slot shown as hidden detail	1/2	mark
½ mark for the gap between the Item 3s ½ mark   ½ mark for drawing the edge of Item 3 as hidden detail (vertical line) ½ mark   Item 4 ½ mark for not sectioning the washer ½ mark   Item 5 1 mark for correctly drawing the bolt head 1 mark   ½ mark for not sectioning the bolt ½ mark   ½ mark for drawing the threaded portion ½ mark   ½ Mark for showing the bolt as hidden detail ½ mark   Item 6 1 mark   1 mark for correctly drawing the nut 1 mark	ltem :	3		
1/2 mark for drawing the edge of Item 3 as hidden detail (vertical line) 1/2 mark   1/2 mark for not sectioning the washer 1/2 mark   1 mark for correctly drawing the bolt head 1 mark   1/2 mark for not sectioning the bolt 1/2 mark   1/2 mark for drawing the threaded portion 1/2 mark   1/2 Mark for showing the bolt as hidden detail 1/2 mark    Item 6  1 mark for correctly drawing the nut  1 mark	1	mark for correctly sectioning Item 3	1	mark
Item 4  1/2 mark for not sectioning the washer  1 mark for correctly drawing the bolt head 1 mark 1/2 mark for not sectioning the bolt 1/2 mark 1/2 mark for not sectioning the bolt 1/2 mark	1/2	mark for the gap between the Item 3s	1/2	mark
1/2 mark for not sectioning the washer 1/2 mark   1 mark for correctly drawing the bolt head 1 mark   1/2 mark for not sectioning the bolt 1/2 mark   1/2 mark for drawing the threaded portion 1/2 mark   1/2 Mark for showing the bolt as hidden detail 1/2 mark    Item 6  1 mark for correctly drawing the nut  1 mark	1/2	· · · · · · · · · · · · · · · · · · ·	1/2	mark
1 mark for correctly drawing the bolt head 1 mark 1/2 mark for not sectioning the bolt 1/2 mark 1/2 mark for drawing the threaded portion 1/2 mark 1/2 Mark for showing the bolt as hidden detail 1/2 mark 1/3 mark 1/4 mark 1/5 mark 1/6 mark 1/7 mark 1/8 mark 1/8 mark	Item 4	4		
1 mark for correctly drawing the bolt head 1 mark 1/2 mark for not sectioning the bolt 1/2 mark 1/2 mark for drawing the threaded portion 1/2 mark 1/2 Mark for showing the bolt as hidden detail 1 mark 1/2 mark	<mark>1/2</mark>	mark for not sectioning the washer	<mark>1/2</mark>	<mark>mark</mark>
½ mark for not sectioning the bolt ½ mark   ½ mark for drawing the threaded portion ½ mark   ½ Mark for showing the bolt as hidden detail ½ mark   Item 6 1 mark for correctly drawing the nut 1 mark	ltem (	5		
½ mark for not sectioning the bolt ½ mark   ½ mark for drawing the threaded portion ½ mark   ½ Mark for showing the bolt as hidden detail ½ mark   Item 6 1 mark for correctly drawing the nut 1 mark	1	mark for correctly drawing the bolt head	1	mark
½ Mark for showing the bolt as hidden detail ½ mark     Item 6 1 mark for correctly drawing the nut 1 mark	1/2		1/2	mark
Item 6  1 mark for correctly drawing the nut  1 mark	1/2	mark for drawing the threaded portion	1/2	mark
1 mark for correctly drawing the nut 1 mark	1/2	Mark for showing the bolt as hidden detail	1/2	mark
	ltem (	6		
TOTAL 18 marks	1	mark for correctly drawing the nut	1	mark
		TOTAL	18	marks

#### **QUESTION 4: DETAILED DRAWING**



[20]

MARK ALLOCATION	
Correctness:	
FSFV (Item 1)	3
FSRV (Item 1)	5
FSFV (Item 2)	4
Line work	3
Accuracy	3
Layout and neatness	2
TOTAL:	20

#### **MARK ALLOCATION FOR CORRECTNESS – QUESTION 4**

## **FV (ITEM 1)**

1/2	mark for the base		1/2	mark
1/2	mark for the vertical upright		1/2	mark
1/2	mark for the web		1/2	mark
1/2	mark for the top flange		1/2	mark
1/2	mark for the cylindrical part		1/2	mark
1/2	mark for hidden detail		1/2	mark
		TOTAL	3	marks

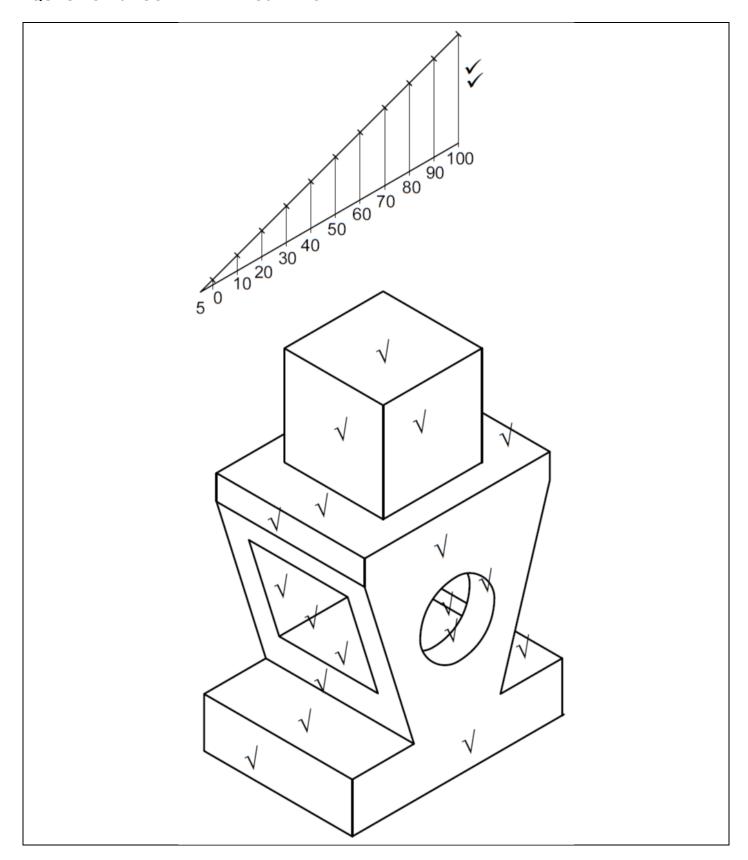
#### RV (ITEM 1)

1/2	mark for the base	1/2	mark
1/2	mark for each Ø12 hole shown as hidden detail	1	mark
1/2	mark for the vertical upright	1/2	mark
1/2	mark for each web	1	mark
1/2	mark for the top flange	1/2	mark
1/2	mark for curved portion at the top	1/2	mark
1/2	mark for the line at the top of the rib	1/2	mark
1/2	mark for the line at the bottom of the rib	1/2	mark
	TOTAL	5	marks

#### HSFV (ITEM 2)

1	mark for correct sectioning	1	mark
1/2	mark for the inner surface not sectioned	1/2	mark
1/2	mark for half of the Ø16 hole not sectioned	1/2	mark
1/2	mark for the embossed part going up to the centre line	1/2	mark
1/2	mark for the flange of the pulley going up to the centre line	1/2	mark
1/2	mark for hidden detail showing the thickness of the boss	1/2	mark
1/2	mark for hidden detail showing the inner surface of the pulley	1/2	mark
	TOTAL	4	marks

#### **QUESTION 5: ISOMETRIC PROJECTION**



[15]

#### -11-ENGINEERING DRAWING N3

MARK ALLOCATION	
Correctness	9
Line work	3
Accuracy	3
TOTAL:	15

#### MARK ALLOCATION FOR CORRECTNESS - QUESTION 5

1/2 mark for each of the areas indicated on the marking guideline 9 marks

TOTAL: 100