higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

# MARKING GUIDELINE

## NATIONAL CERTIFICATE

## ENGINEERING DRAWING N2

## 21 April 2021

**This marking guideline consists of 12 pages.**

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## QUESTION 1: FUNDAMENTALS OF ENGINEERING DRAWING, ELECTRICAL FITTINGS AND WELDING SYMBOLS

**ANSWER SHEET:**

1.1 1.1.1 Repetitive detail and dimensions can be drawn much quicker.

1.1.2 Drawings can be easily stored.

1.1.3 Changes to drawings can be made to suit various clients.

Alternative: Drawings can be printed quickly.
Linework is consistently good.

(Any 3 x 1) (3)

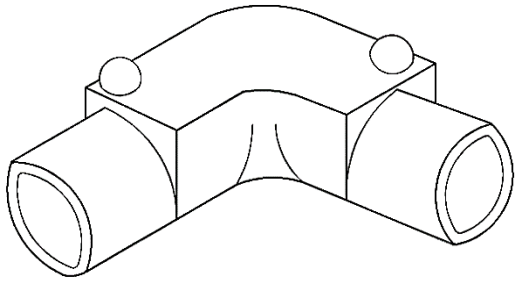
1.2 1.2.1 Very good printing quality

1.2.2 Quiet operation

Alternative: Colour printing possible

(Any 2 x 1) (2)

1.3



| | |
|---|---|
| Correctness | 3 |
| Accuracy | 1 |
| Line work | 1 |

(5 × 1) (5)

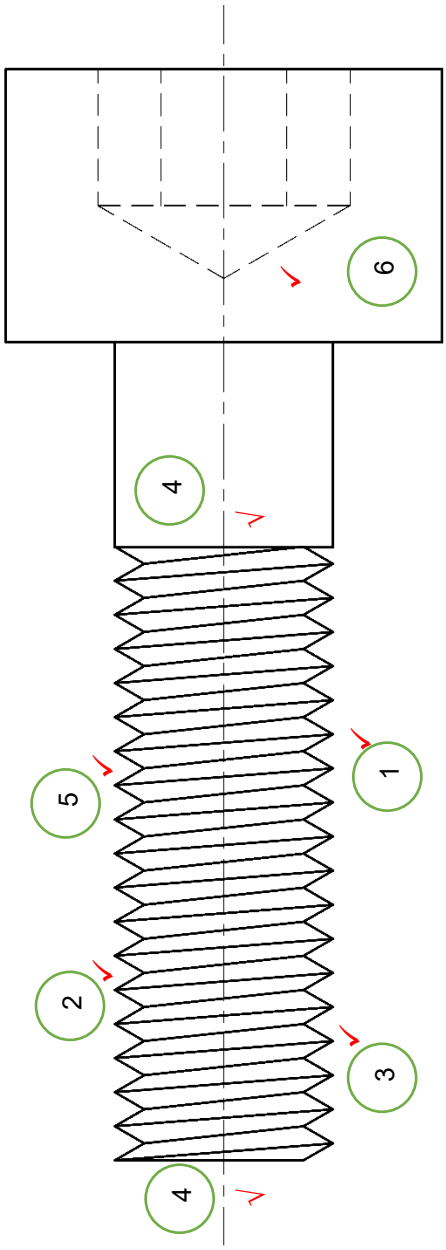
1.4 1.4.1 C
1.4.2 B
1.4.3 D
1.4.4 A
1.4.5 C

(5 x 1) (5)
**[15]**

| MARKING CRITERIA FOR CORRECTNESS | | MARK ALLOCATION |
|---|---|---|
| 1.1 | Fundamentals of engineering drawing | 3 |
| 1.2 | Fundamentals of engineering drawing | 2 |
| 1.3 | Electrical fitting | 5 |
| 1.4 | Welding symbol | 5 |

**[15]**

## QUESTION 2: SCREW THREADS




**[10]**

| MARKING CRITERIA | |
|---|---|
| Correctness | 6 |
| Line work | 2 |
| Accuracy | 1 |
| Layout and neatness | 1 |
| **TOTAL:** | **10** |

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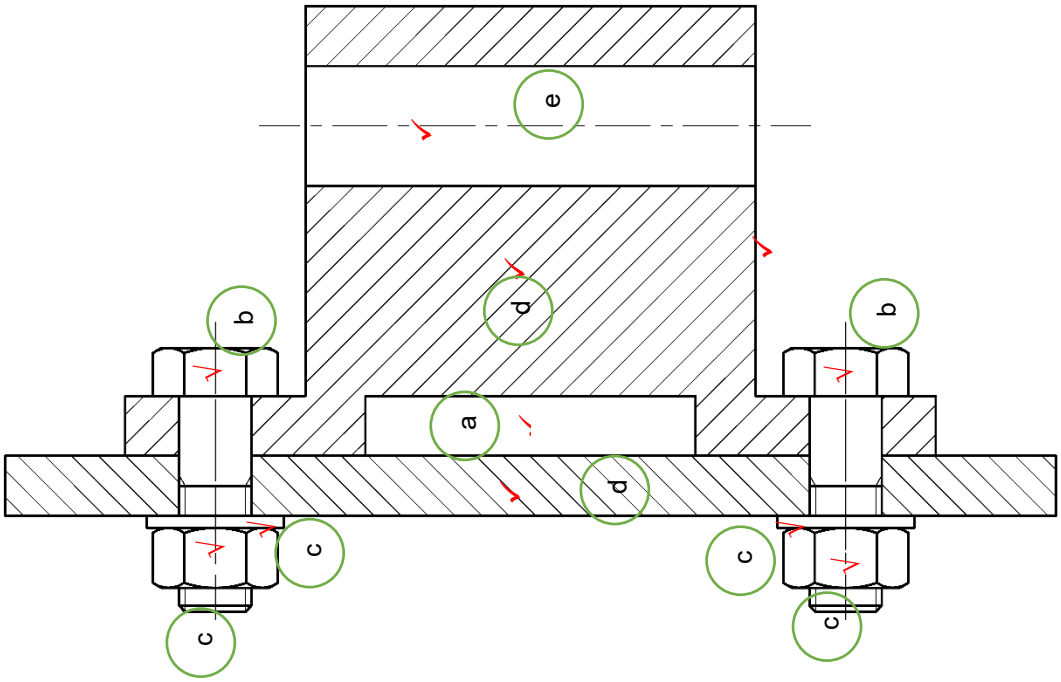
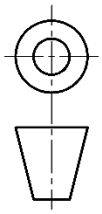
## MARK ALLOCATION FOR CORRECTNESS

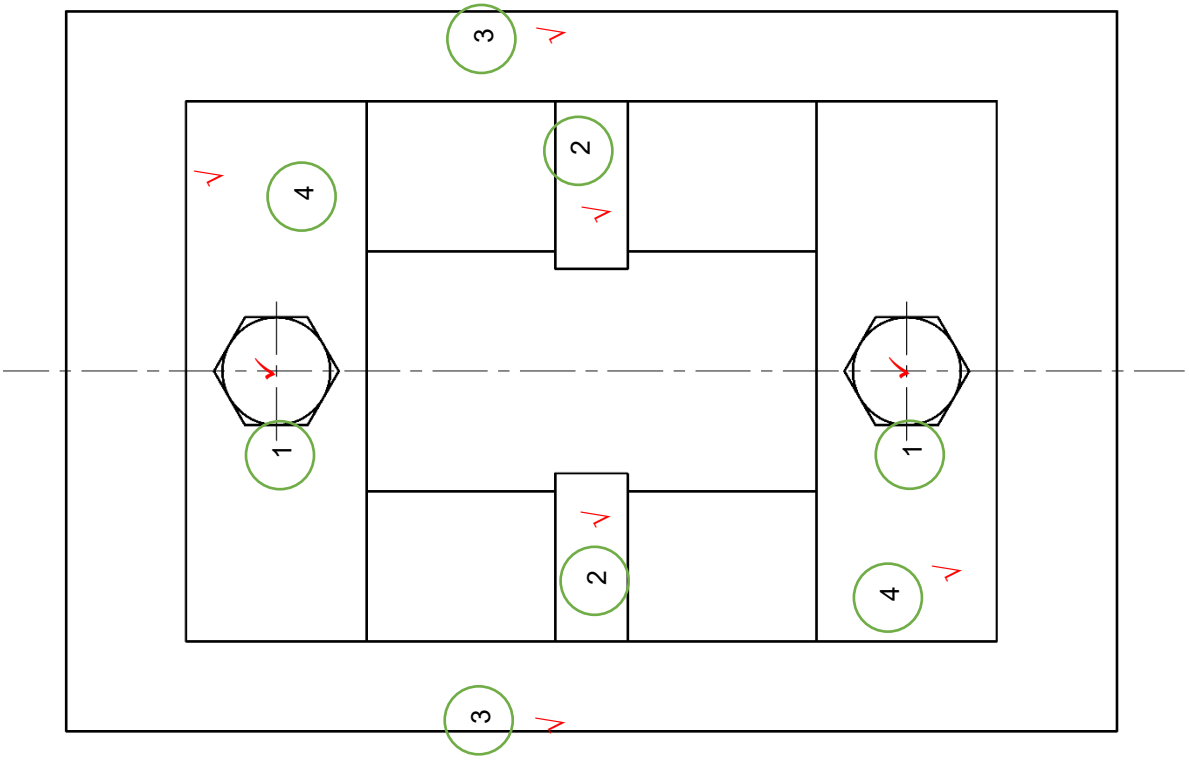
| | | | | |
|---|---|---|---|---|
| 1 | 1 | mark for the direction | 1 | mark |
| 2 | 1 | mark for the thread detail | 1 | mark |
| 3 | 1 | mark for angle of the thread | 1 | mark |
| 4 | 1 | mark for start and end detail | 1 | mark |
| 5 | 1 | mark for the pitch | 1 | mark |
| 6 | 1 | mark for bolt head with hidden detail | 1 | mark |
| | | **TOTAL** | **6** | **marks** |

**[10]**

## QUESTION 3: FIRST-ANGLE ORTHOGRAPHIC PROJECTION






**[20]**

| MARKING CRITERIA | |
|---|---|
| Correctness: | |
| FV | 5 |
| LV | 7 |
| Title and scale | 2 |
| Projection symbol | 1 |
| Line work | 2 |
| Accuracy | 2 |
| Layout and neatness | 1 |
| **TOTAL:** | **20** |

## MARK ALLOCATION FOR CORRECTNESS

### FV

| | | | | |
|---|---|---|---|---|
| 1 | 2 | marks for bolts | 2 | marks |
| 2 | 1 | mark for webs | 1 | mark |
| 3 | 1 | mark for base plate | 1 | mark |
| 4 | 1 | mark for casting | 1 | mark |
| | | **TOTAL** | **5** | **marks** |

### SECTIONED LV

| | | | | |
|---|---|---|---|---|
| a | 1 | mark for the 10 x 55 space | 1 | mark |
| b | ½ | mark for the m12 bolts in correct position (x2) | 1 | mark |
| c | ½ | mark for the washers and nuts in correct position (x2) | 2 | marks |
| d | 2 | marks for the sectioning | 2 | marks |
| e | 1 | mark for hole | 1 | mark |
| | | **TOTAL** | **7** | **marks** |

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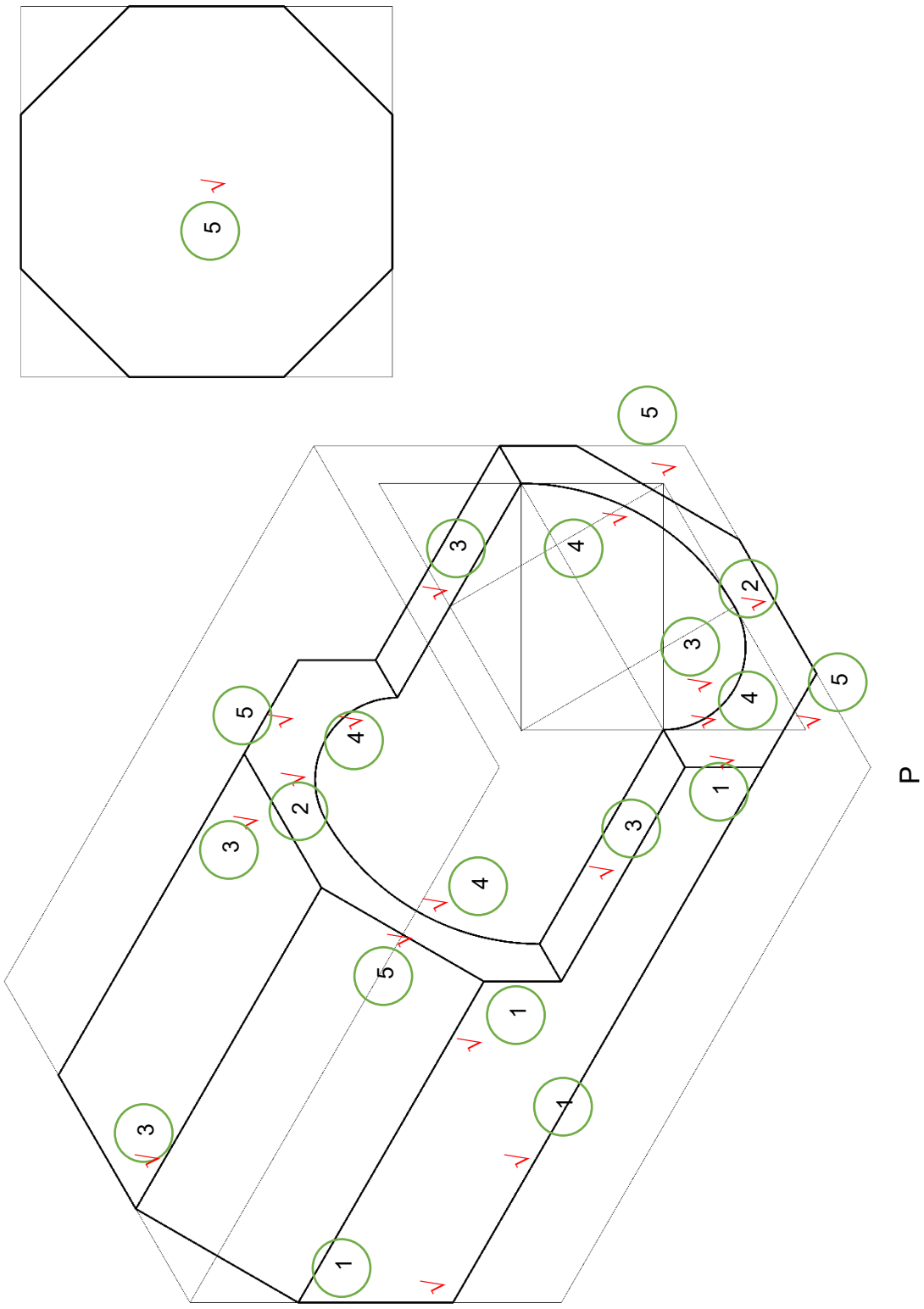
## QUESTION 4: ISOMETRIC




**[15]**

| MARKING CRITERIA | |
|---|---|
| Correctness | 10 |
| Point P in correct position | 1 |
| Line work | 2 |
| Accuracy | 1 |
| Layout and neatness | 1 |
| **TOTAL:** | **15** |

## MARK ALLOCATION FOR CORRECTNESS

| | | | | |
|---|---|---|---|---|
| 1 | 2 | marks for the Front view | 2 | marks |
| 2 | 1 | mark for the Left view | 1 | marks |
| 3 | 2½ | marks for the Top view | 2½ | marks |
| 4 | 2 | marks for the isometric circles | 2 | marks |
| 5 | 2½ | marks for the octagon | 2½ | marks |
| | | **TOTAL** | **10** | **marks** |

**[15]**

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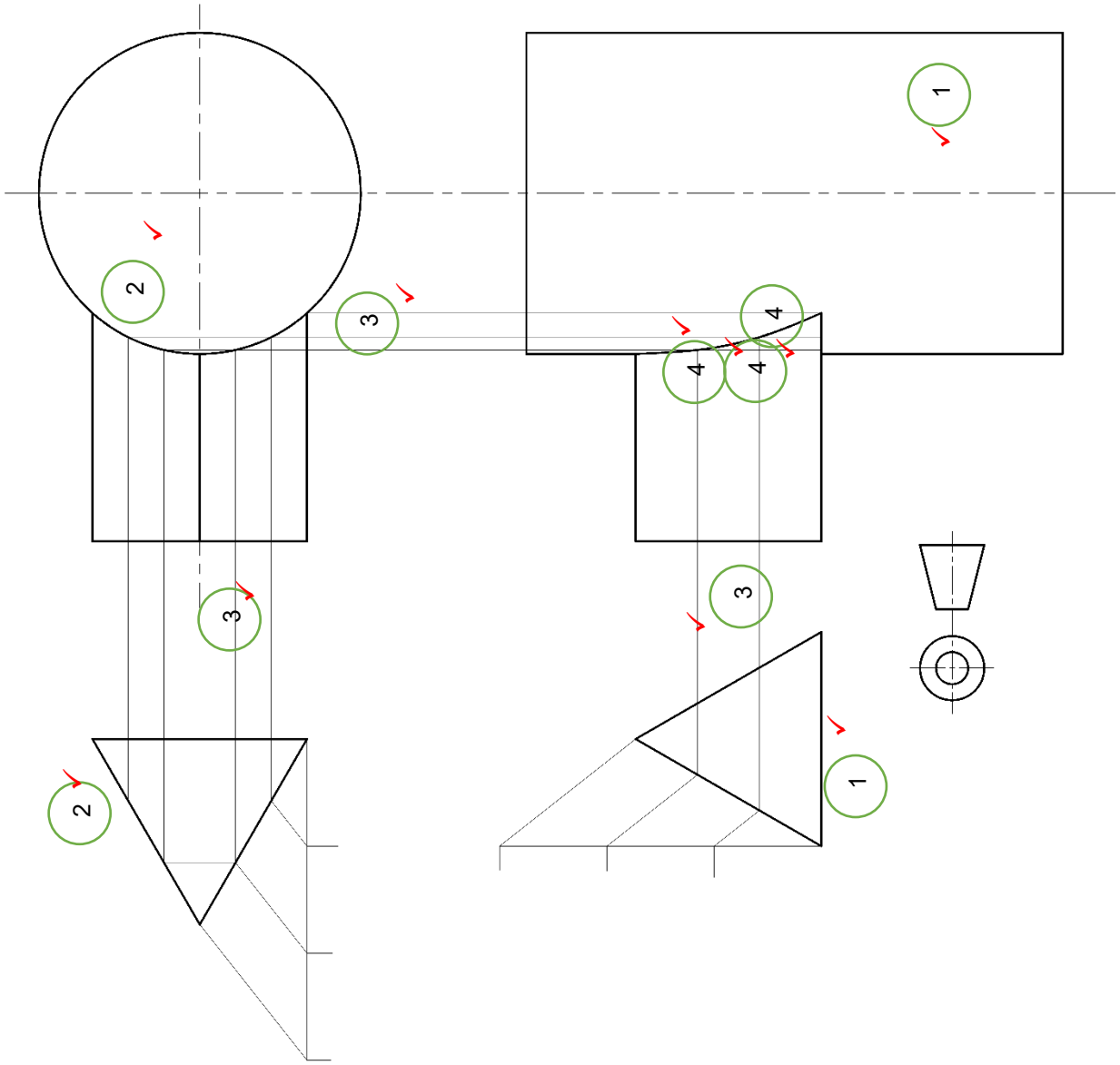
## QUESTION 5: INTERPENETRATION




**[13]**

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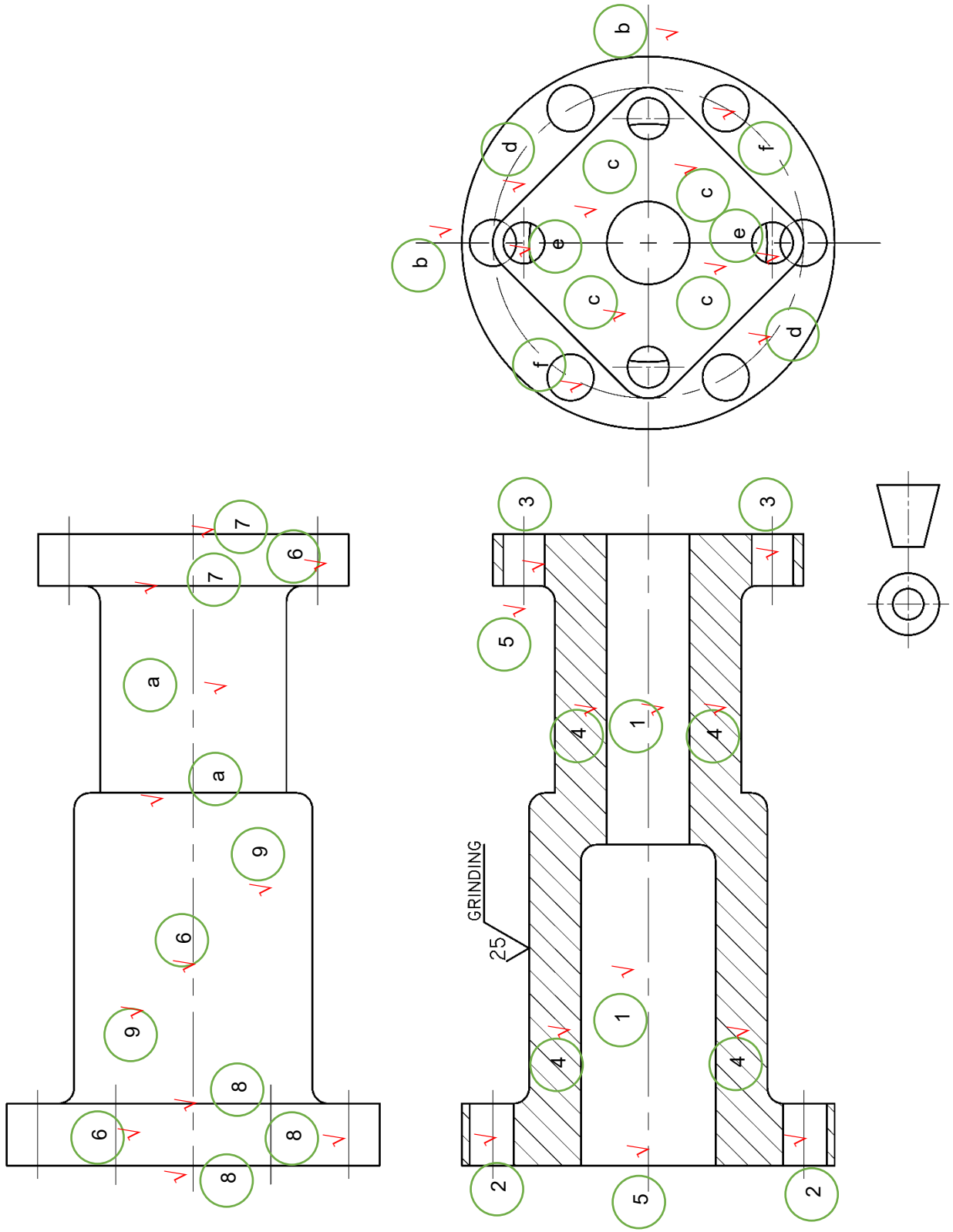
| MARKING CRITERIA | |
|---|---|
| Correctness: | |
| FV, TV | 4 |
| Construction lines (to project curve) | 4 |
| Interpenetration curve | 2 |
| Line work | 2 |
| Accuracy | 1 |
| **TOTAL:** | **13** |

## MARK ALLOCATION FOR CORRECTNESS

| | | | | |
|---|---|---|---|---|
| 1 | 2 | marks for the given front view/auxiliary view | 2 | marks |
| 2 | 2 | mark for the top view and auxiliary view | 2 | marks |
| 3 | 3 | marks for the construction lines (to project the curve) | 3 | marks |
| 4 | 3 | marks for the interpenetration curves | 3 | marks |
| | | **TOTAL** | **9** | **marks** |

**[13]**

## QUESTION 6: THIRD-ANGLE ORTHOGRAPHIC PROJECTION AND MACHINE SYMBOLS




**[13]**

| MARKING CRITERIA | |
|---|---|
| Correctness: | |
| Sectional FV | 6 |
| RV | 6 |
| TV | 6 |
| Projection symbol | 1 |
| Machine symbol | 2 |
| Line work | 3 |
| Accuracy | 2 |
| Layout and neatness | 1 |
| **TOTAL:** | **27** |

## MARK ALLOCATION FOR CORRECTNESS

### FULL SECTIONAL FV

| | | | | |
|---|---|---|---|---|
| 1 | 1 | mark for centre hole | 1 | mark |
| 2 | 1 | mark for centre round flange holes | 1 | mark |
| 3 | 1 | mark for centre square flange holes | 1 | mark |
| 4 | 2 | marks for sectioning | 2 | mark |
| 5 | 1 | marks for centre lines | 1 | mark |
| | | **TOTAL** | **6** | **marks** |

### TV

| | | | | |
|---|---|---|---|---|
| 6 | 1½ | mark for centre lines | 1½ | mark |
| 7 | 1 | mark for the square flange | 1 | mark |
| 8 | 1½ | mark for the round flange | 1½ | mark |
| 9 | 1 | mark for the diameter 46 part | 1 | mark |
| a | 1 | marks for the diameter 36 part | 1 | mark |
| | | **TOTAL** | **6** | **marks** |

### RV

| | | | | |
|---|---|---|---|---|
| b | 1 | mark for centre lines | 1 | mark |
| c | 2 | marks for square flange | 2 | marks |
| d | 1 | Mark for the round flange | 1 | marks |
| e | 1 | mark for the Ø8 holes | 1 | mark |
| f | 1 | mark for the Ø9 holes | 1 | mark |
| | | **TOTAL** | **6** | **marks** |

**(27)**

**TOTAL: 100**

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