

Marking Scheme
Strictly Confidential
(For Internal and Restricted use only)
Senior School Certificate Examination, 2025
SUBJECT NAME: ENGINEERING GRAPHICS (Q.P. CODE 68)

General Instructions: -

1	You are aware that evaluation is the most important process in the actual and correct assessment of the candidates. A small mistake in evaluation may lead to serious problems which may affect the future of the candidates, education system and teaching profession. To avoid mistakes, it is requested that before starting evaluation, you must read and understand the spot evaluation guidelines carefully.
2	“Evaluation policy is a confidential policy as it is related to the confidentiality of the examinations conducted, Evaluation done and several other aspects. Its leakage to public in any manner could lead to derailment of the examination system and affect the life and future of millions of candidates. Sharing this policy/document to anyone, publishing in any magazine and printing in Newspaper/Website, etc. may invite action under various rules of the Board and IPC.”
3	Evaluation is to be done as per instructions provided in the Marking Scheme. It should not be done according to one’s own interpretation or any other consideration. Marking Scheme should be strictly adhered to and religiously followed. However, while evaluating, answers which are based on latest information or knowledge and/or are innovative, they may be assessed for their correctness otherwise and due marks be awarded to them. In class-XII, while evaluating two competency-based questions, please try to understand given answer and even if reply is not from marking scheme but correct competency is enumerated by the candidate, due marks should be awarded.
4	The Marking scheme carries only suggested value points for the answers. These are in the nature of Guidelines only and do not constitute the complete answer. The students can have their own expression and if the expression is correct, the due marks should be awarded accordingly.
5	The Head-Examiner must go through the first five answer books evaluated by each evaluator on the first day, to ensure that evaluation has been carried out as per the instructions given in the Marking Scheme. If there is any variation, the same should be zero after deliberation and discussion. The remaining answer books meant for evaluation shall be given only after ensuring that there is no significant variation in the marking of individual evaluators.

6	Evaluators will mark (√) wherever answer is correct. For wrong answer CROSS 'X' be marked. Evaluators will not put Right (✓) while evaluating which gives an impression that answer is correct and no marks are awarded. This is most common mistake which evaluators are committing.
7	If a question has parts, please award marks on the right-hand side for each part. Marks awarded for different parts of the question should then be totalled up and written in the left-hand margin and encircled. This may be followed strictly.
8	If a question does not have any parts, marks must be awarded in the left-hand margin and encircled. This may also be followed strictly.
9	If a student has attempted an extra question, answer of the question deserving more marks should be retained and the other answer scored out with a note “Extra Question” .
10	No marks to be deducted for the cumulative effect of an error. It should be penalized only once.
11	A full scale of marks 70 has to be used. Please do not hesitate to award full marks if the answer deserves it.
12	Every examiner has to necessarily do evaluation work for full working hours i.e., 8 hours every day and evaluate 20 answer books per day in main subjects and 25 answer books per day in other subjects (Details are given in Spot Guidelines). This is in view of the reduced syllabus and number of questions in question paper.
13	Ensure that you do not make the following common types of errors committed by the Examiner in the past:- <ul style="list-style-type: none"> ● Leaving answer or part thereof unassessed in an answer book. ● Giving more marks for an answer than assigned to it. ● Wrong totalling of marks awarded on an answer. ● Wrong transfer of marks from the inside pages of the answer book to the title page. ● Wrong question wise totalling on the title page. ● Wrong totalling of marks of the two columns on the title page. ● Wrong grand total. ● Marks in words and figures not tallying/not same. ● Wrong transfer of marks from the answer book to online award list. ● Answers marked as correct, but marks not awarded. (Ensure that the right tick mark is correctly and clearly indicated. It should merely be a line. Same is with the X for incorrect answer.) ● Half or a part of answer marked correct and the rest as wrong, but no marks awarded.
14	While evaluating the answer books if the answer is found to be totally incorrect, it should be marked as cross (X) and awarded zero (0) Marks.
15	Any unassessed portion, non-carrying over of marks to the title page, or totalling error detected by the candidate shall damage the prestige of all the

	personnel engaged in the evaluation work as also of the Board. Hence, in order to uphold the prestige of all concerned, it is again reiterated that the instructions be followed meticulously and judiciously.
16	The Examiners should acquaint themselves with the guidelines given in the “Guidelines for Spot Evaluation” before starting the actual evaluation.
17	Every Examiner shall also ensure that all the answers are evaluated, marks carried over to the title page, correctly totalled and written in figures and words.
18	The candidates are entitled to obtain photocopy of the Answer Book on request on payment of the prescribed processing fee. All Examiners/Additional Head Examiners/Head Examiners are once again reminded that they must ensure that evaluation is carried out strictly as per value points for each answer as given in the Marking Scheme.

Specific Instructions:	
a)	Marks are to be awarded in proportion to the work done.
b)	Mistakes in dimensioning up to ± 1.0 mm may be ignored.
c)	In dimensioning, arrow-heads of various types, as per SP: 46-2003 codes are acceptable. However, where space is too small for an arrowhead, oblique stroke or dot may be employed.
d)	In sectioned view of question no. 23 and in question no. 24, if hidden edges / lines are drawn, no marks should be deducted.
e)	Other standard methods of drawing / proportions for isometric scale, nuts, heads of bolts, screws etc. employed by examinees, may also be accepted.
f)	The answers/solutions must be evaluated adhering to marking scheme and no marks should be deducted without mistake.

Set 4

MARKING SCHEME

ENGINEERING GRAPHICS

SECTION – A

Q. 1 to Q.14

14×1=14

1. (B) Hidden edges
2. (C) The interior details of a complicated object
3. (D) (iv)
4. (A) (i) and (iv) only
5. (C) (iii)
6. (B) (ii)
7. (B) (iii) only
8. (A) 1-(ii), 2-(i), 3-(iv), 4-(iii)
9. (A) Square thread
10. (C) 30 mm
11. (D) (iii) only
12. (C) Shaft
13. (A) Constraints of manufacturing
14. (B) 1-(ii), 2-(iii), 3-(i), 4-(iv)

SECTION – B

Q. 15 to Q.18

4×1=4

15. (B) isometric projection and orthographic projection
16. (A) Solids of revolution
17. (B) 420 mm
18. (D) 1540 cm²

Q. 19 to Q.22

4×1=4

19. (D) (iv)
20. (A) represent conventionally the external V-thread
21. (C) Headless screw
22. (B) To prevent the relative motion

23. (a) TURN-BUCKLE (ASSEMBLY):

- (i) FRONT VIEW, UPPER HALF IN SECTION **(13)**
- Drawing the upper half of the body (3)
with hatching lines (1) 4
 - Drawing the lower half of the body 3
 - Drawing both rods inserting 54 mm in the body with arc
(1½ X 2=3), conventional representation of threads (1X2=2)
and conventional ends of rods (½ X2=1) 6
- (ii) RIGHT SIDE VIEW **(8)**
- Four circles including broken circle 4
 - Hatching lines showing conventional end of rod B (½) and
cutting plane (½) 1
 - Hidden lines representing the central portion of the body at a
distance of 44 mm 3

Details:	(6)
• Printing the title	1
• Scale used	1
• Projection Symbol	1
• Six important dimensions	3

OR

23. (b) SLEEVE AND COTTER JOINT (DIS-ASSEMBLY):

(i) SLEEVE

(a) FRONT VIEW LOWER HALF IN SECTION (8)

- Drawing the boundary of sleeve with rounds of R4 (3) and a horizontal line in lower half showing a hole of $\varnothing 32$ (1) 4
- Drawing the cotter holes with taper in the lower half ($2\frac{1}{2}$), showing correctness of taper in cotter holes ($\frac{1}{2}$) as given in the question 3
- Drawing hatching lines in lower half 1

(b) LEFT SIDE VIEW (6)

- Circle of $\varnothing 52$ (2) and circle of $\varnothing 32$ ($1\frac{1}{2}$) $3\frac{1}{2}$
- Both cotter holes 2
- Cutting plane $\frac{1}{2}$

(ii) COTTER - B

(a) FRONT VIEW (4)

- Vertical straight edge (1) and taper edge (1) 2
- Upper and lower horizontal lines with curves 2

(b) LEFT SIDE VIEW (3)

- Two parallel vertical edges 1
- Upper and lower ends of cotter 2

Details: (6)

- Printing the titles of both 1

- Scale used 1
- Projection Symbol 1
- Six important dimensions 3

SECTION – C

- 24. (a) ISOMETRIC SCALE :** **(4)**
- (i) Drawing lines at an angle of 30° and 45° . 1
 - (ii) Marking of divisions of 10mm, including divisions of first part of one mm on true length. 1
 - (iii) Projections from true length 1:1 to get points on isometric length, construction of isometric scale. 1
 - (iv) Printing 'True length / Scale 1:1', 'Isometric length/Isometric scale' and marking angles of 30° and 45° . 1
- 24. (b) ISOMETRIC PROJECTION OF TRIANGULAR PRISM:** **(9)**
- (i) Drawing helping figure 1
 - (ii) Drawing inverted isometric triangles [front (3) and rear ($1\frac{1}{2}$)] $4\frac{1}{2}$
 - (iii) Drawing horizontal three edges $1\frac{1}{2}$
 - (iv) Drawing axis perpendicular to V.P. ($\frac{1}{2}$) and direction of viewing ($\frac{1}{2}$) 1
 - (v) All Dimensions 1

Note: For incorrect position, (1) mark should be deducted.

- 25. (a) EXTERNAL METRIC THREAD PROFILE:** **(8)**
- (i) Horizontal distances (equal to half of pitch), vertical distances ($D=0.866P$, $D/8$ and $D/6$) marked correctly. 2
 - (ii) Drawing of crests (1) and roots (1) of threads (minimum two), flanks (1) drawn correctly. 3
 - (iii) Drawing hatching lines with conventional break. 1
 - (iv) Standard dimensions. 2

Note: If sketched freehand, instead of drawing to scale 1:1, two (2) marks should be deducted, in all..

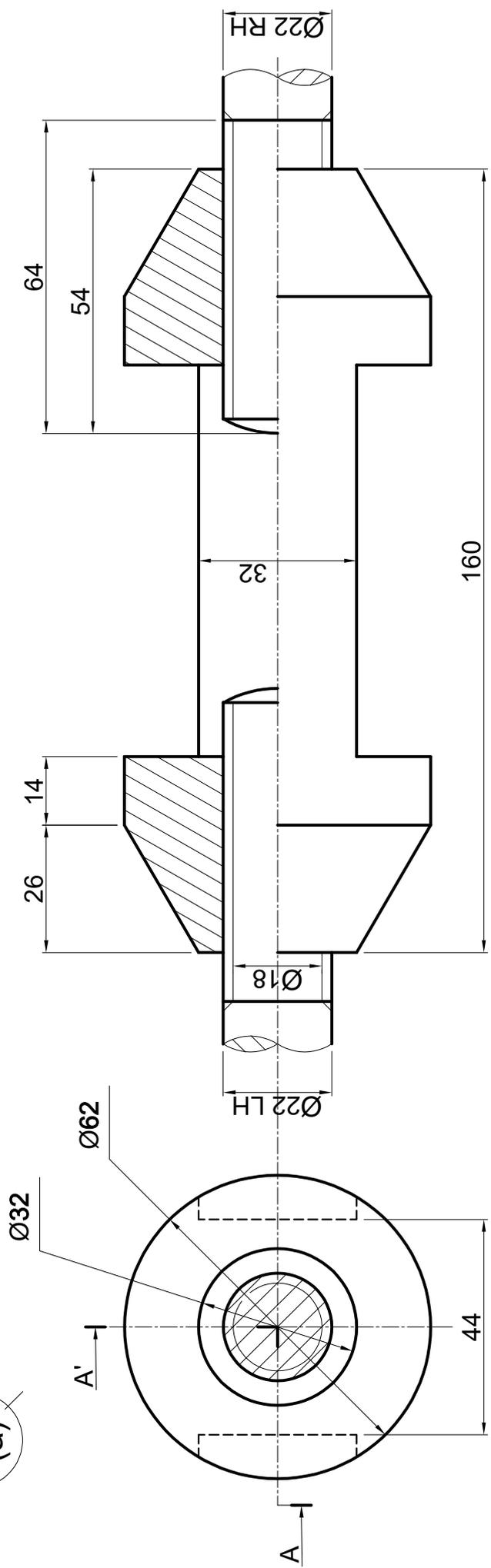
OR

25. (b) FRONT VIEW OF VERTICAL HEXAGONAL BOLT : (8)

- | | | |
|-------|---|---|
| (i) | Drawing hexagonal head of the bolt resting on HP (Across the Flat or across the corner). | 3 |
| (ii) | Drawing of chamfering arcs. | 1 |
| (iii) | Drawing the threaded (1), unthreaded ($\frac{1}{2}$) portion and conventional end ($\frac{1}{2}$) of the shank. | 2 |
| (iv) | Standard dimensions. | 2 |

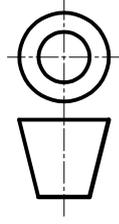
- Note:**
1. For incorrect position, (1) mark should be deducted.
 2. If sketched freehand, instead of drawing to scale 1:1, two (2) marks should be deducted, in all.

23
(a)



RIGHT SIDE VIEW

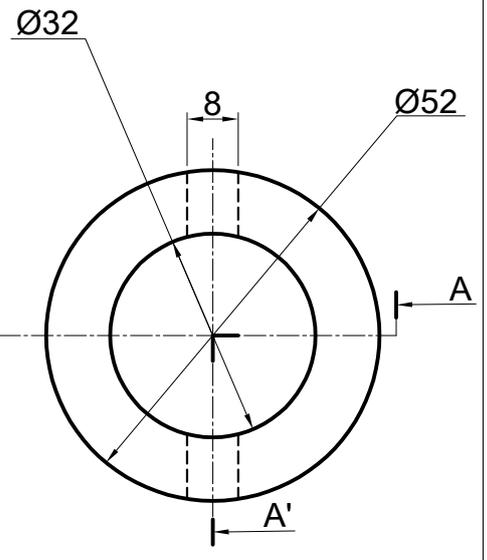
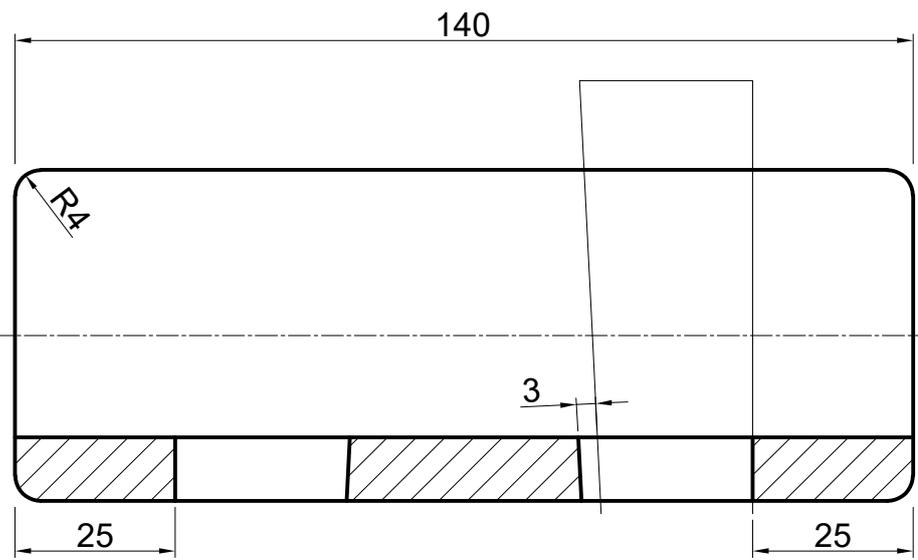
FRONT VIEW, UPPER HALF IN SECTION



ASSEMBLY OF TURN-BUCKLE

SCALE - 1:1

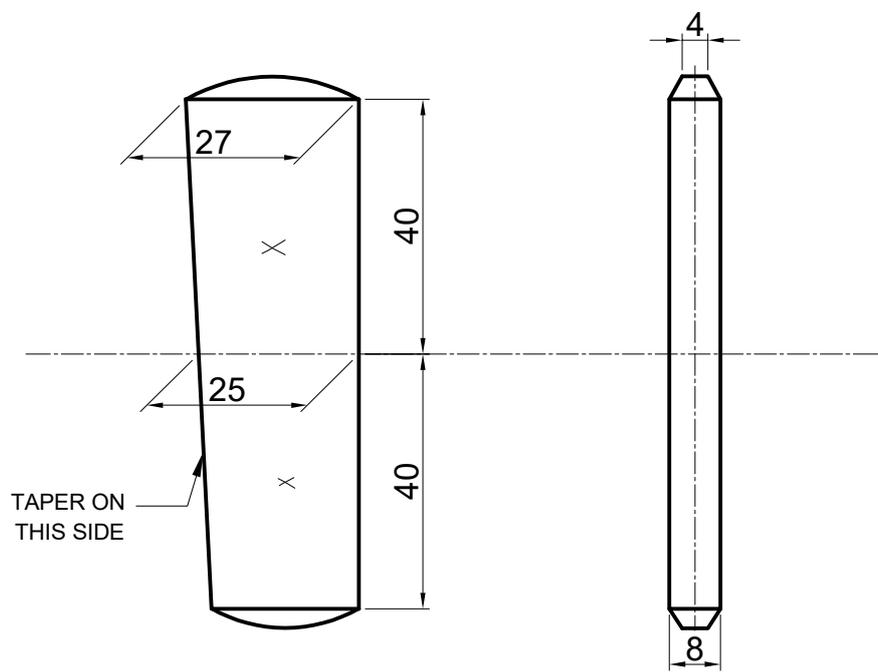
23
(b)



FRONT VIEW, LOWER HALF IN SECTION

LEFT SIDE VIEW

SLEEVE

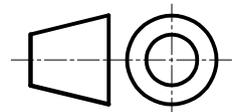


TAPER ON THIS SIDE

FRONT VIEW

LEFT SIDE VIEW

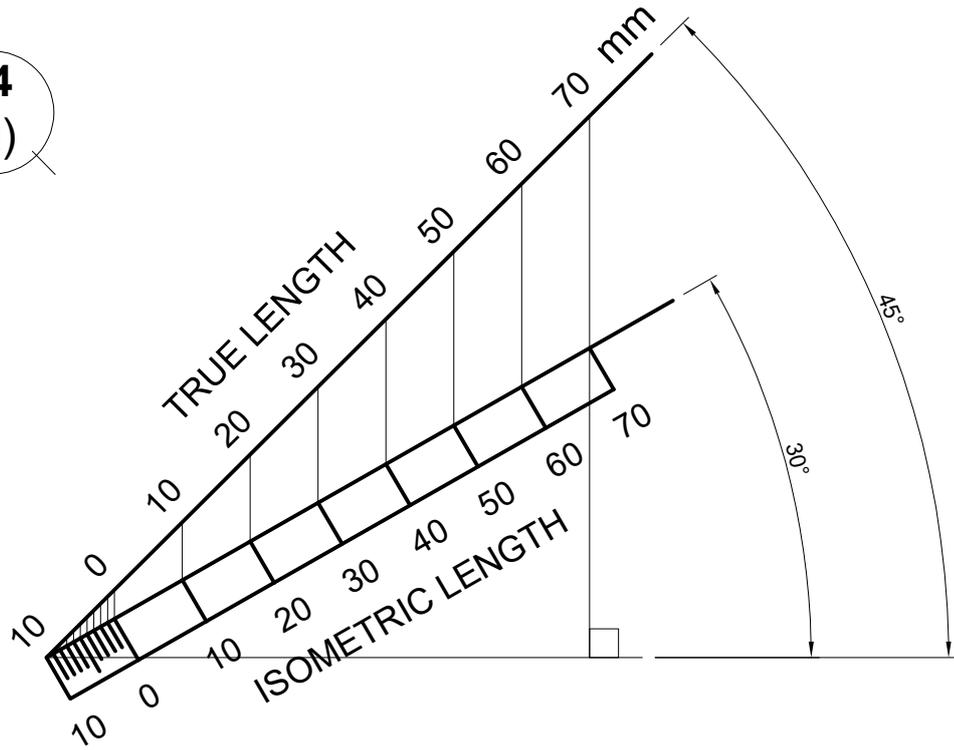
COTTER - B



SCALE - 1:1

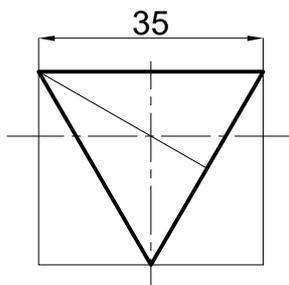
DISASSEMBLY OF SLEEVE AND COTTER JOINT

24
(a)

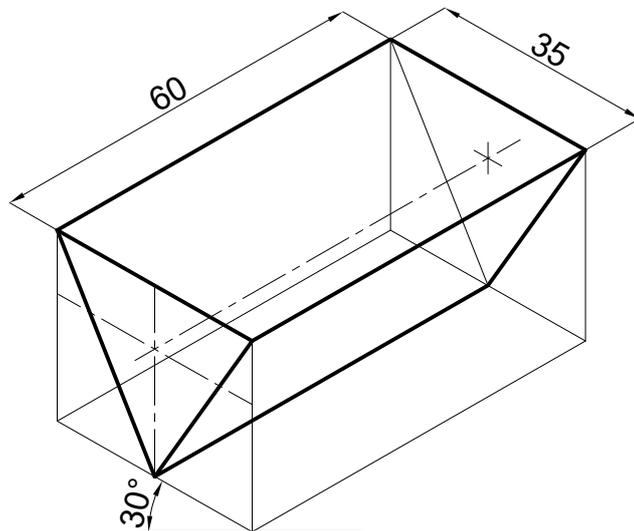


ISOMETRIC SCALE

24
(b)



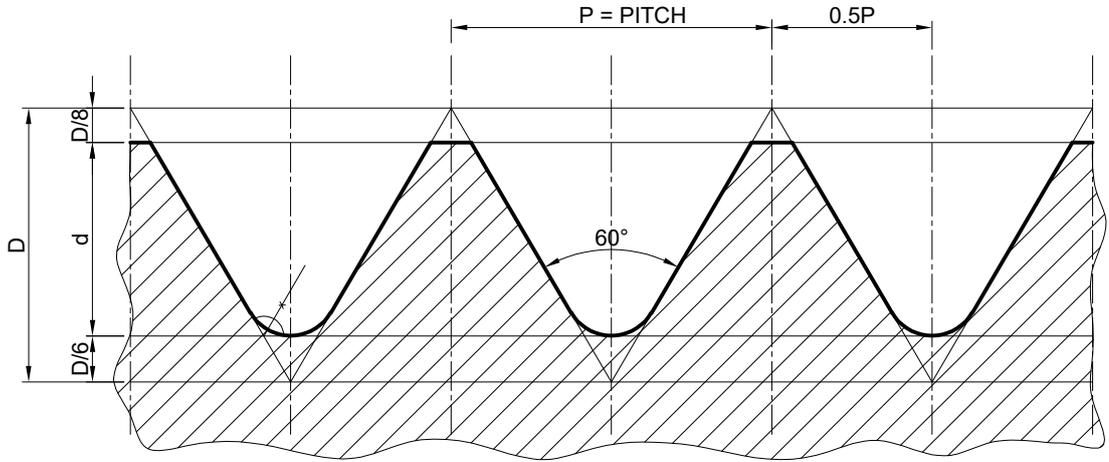
HELPING FIGURE



ISOMETRIC PROJECTION

25
(a)

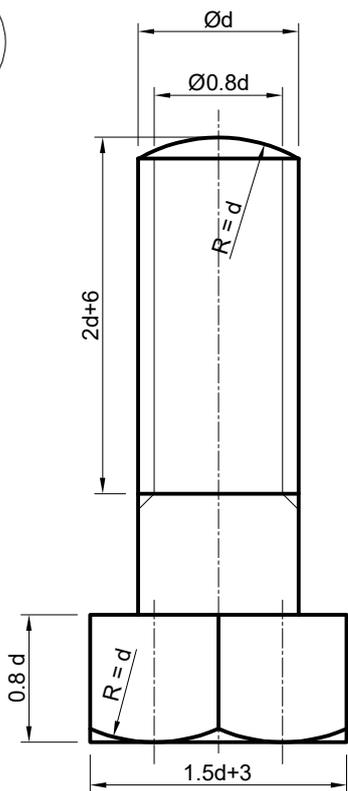
P	0.5P	$D=0.866P$	$d=0.61P$	D/8	D/6
50	25	43.3	30.5	5.4	7.2



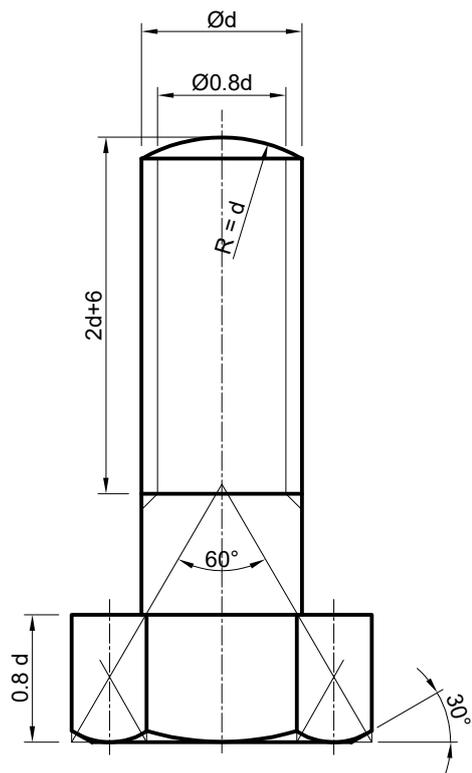
EXTERNAL METRIC THREAD

25
(b)

OR



FRONT VIEW (ACROSS FLAT)



FRONT VIEW (ACROSS CORNER)

HEXAGONAL HEADED BOLT

d	0.8d	1.5d+3	2d+6
25	20	40.5	56