

**Marking Scheme**  
**Strictly Confidential**  
**(For Internal and Restricted use only)**  
**Senior School Certificate Examination, 2024**  
**SUBJECT NAME ENGINEERING GRAPHICS (Q.P. CODE 68)**

**General Instructions: -**

<b>1</b>	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.
<b>2</b>	<b>“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 News Paper/Website etc may invite action under various rules of the Board and IPC.”</b>
<b>3</b>	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. <b>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-X, 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.</b>
<b>4</b>	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.
<b>5</b>	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.
<b>6</b>	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. <b>This is most common mistake which evaluators are committing.</b>
<b>7</b>	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 totaled up and written in the left-hand margin and encircled. This may be followed strictly.
<b>8</b>	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.
<b>9</b>	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 <b>“Extra Question”</b> .

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	<p>Ensure that you do not make the following common types of errors committed by the Examiner in the past:-</p> <ul style="list-style-type: none"> <li>● Leaving answer or part thereof unassessed in an answer book.</li> <li>● Giving more marks for an answer than assigned to it.</li> <li>● Wrong totaling of marks awarded on an answer.</li> <li>● Wrong transfer of marks from the inside pages of the answer book to the title page.</li> <li>● Wrong question wise totaling on the title page.</li> <li>● Wrong totaling of marks of the two columns on the title page.</li> <li>● Wrong grand total.</li> <li>● Marks in words and figures not tallying/not same.</li> <li>● Wrong transfer of marks from the answer book to online award list.</li> <li>● 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.)</li> <li>● Half or a part of answer marked correct and the rest as wrong, but no marks awarded.</li> </ul>
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 totaling 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 “ <b>Guidelines for Spot Evaluation</b> ” 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 totaled 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.

<b>General Note:</b>	
a)	Marks are to be awarded in proportion to the work done.
b)	Mistakes in dimensioning up to $\pm 1.0$ 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 question no. 21 and in sectioned view of question no. 23, 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

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### SECTION - A

20x1=20

1. (B) axonometric, oblique and perspective
2. (B) Isometric projection
3. (B) behind V.P. and above H.P.
4. (B) Actual scale

### OR

- (D) Isometric scale
5. (B) (ii) and (iv) only
6. (C) (ii) and (iii) only
7. (C) (iii)
8. (D) 1-(i), 2-(iii), 3-(iv), 4-(ii)
9. (C) (iv) only
10. (A) 1-(iv), 2-(iii), 3-(i), 4-(ii)
11. (D) 1-(ii), 2-(i), 3-(iv), 4-(iii)
12. (A) 8 mm
13. (A) internally
14. (D) one
15. (B) arcs, circle

16. (C) major diameter circle as a complete circle and minor diameter as an incomplete circle.
17. (C) Stud
18. (A) 12 mm
19. (D) plain stud
20. (B) 20 mm

### SECTION – B

21. (A) **CONSTRUCTION OF ISOMETRIC SCALE** **5**
- (i) Drawing lines at an angle of  $30^\circ$  and  $45^\circ$  *1*
- (ii) Marking of divisions of 10 mm, including division of first part of 1 mm on true length/scale 1:1 *1*
- (iii) Projections from scale 1 : 1 to get points on isometric scale, construction of isometric scale *2*
- (iv) Printing “True Length/Scale 1:1”, “Isometric Length/Isometric Scale” and marking angles  $30^\circ$ ,  $45^\circ$  *1*
- (B) **ISOMETRIC PROJECTION OF PENTAGONAL PRISM** **10**
- (i) Drawing helping figure of pentagon *2*
- (ii) Drawing upper isometric pentagon (2) and lower isometric pentagon (1) keeping one base edge parallel to V.P. and away from it. *3*
- (iii) Drawing vertical edges *3*
- (iv) Marking the axis ( $\frac{1}{2}$ ) and direction of viewing ( $\frac{1}{2}$ ) *1*
- (v) Dimensions *1*

**Note :** For incorrect position, 1 mark should be deducted

**22.(A)PROFILE OF KNUCKLE THREAD** **8**

- (i) Marking of horizontal distances equal to half of pitch and one horizontal centre line to create centre points of arcs 2
- (ii) Drawing semi-circular arcs of radius  $0.25P$ , showing crests and roots of threads (minimum two) 3
- (iii) Drawing hatching lines with conventional break 1
- (iv) Standard dimensions 2

**OR**

**(B) SQUARE HEADED BOLT** **8**

Front View

- (i) Shank with threaded portion (length of bolt as 80mm) and conventional end, drawn correctly 2
- (ii) Head portion with chamfering, drawn correctly 2

Left Side View

- (i) Left side view with chamfering circle and conventional representation of threads, drawn correctly 2
- Standard dimensions 2

**Note :**

1. For incorrect position or freehand sketch, 2 marks should be deducted, in all.
2. The position of head of the square headed bolt can be drawn on either side and must be projected accordingly in left side view.

## 23.(A) ASSEMBLY OF OPEN BEARING

(i) <b>Front view right half in section</b>	<b>13</b>
- Drawing the right half of the body (2), sole recess (1) and hatching lines (1)	4
- Drawing the right half of the bush (2) with hatching lines (1)	3
- Drawing left half of the body	2
- Drawing collar of the bush in left half	2
- Drawing the bolt hole in right half ( $1\frac{1}{2}$ ) and axis of the bolt hole in the left half ( $\frac{1}{2}$ )	2
(ii) <b>Left side view</b>	<b>8</b>
- Drawing the boundary of the body with one horizontal line for sole at 18mm ( $2\frac{1}{2}$ ) and hidden lines showing bolt hole and sole recess ( $1\frac{1}{2}$ )	4
- Drawing the collar portion of bush on each side (2) with two hidden lines (2)	4
<b>DETAILS</b>	<b>6</b>
Printing title (1), Scale used (1), Projection symbol (1), Six important dimensions (3)	

**OR**

**(B) BUSH BEARING (DISASSEMBLY)**

(i) BODY

<b>(a) Full sectional front view</b>	<b>8</b>
- Drawing the outline of the body (2), drawing two bolt holes indicating CRS (2), recess (1)	5
- Drawing inner circle of dia 44mm	1
- Drawing of oil hole	1
- Hatching lines	1
<b>(b) Left side view</b>	<b>7</b>
- Drawing the outline of the body with one horizontal line for sole at 14mm	3
- Two horizontal hidden lines (1) and hidden lines showing bolt hole and recess (2), hidden oil hole ( $\frac{1}{2}$ )	3 $\frac{1}{2}$
- Cutting plane	$\frac{1}{2}$

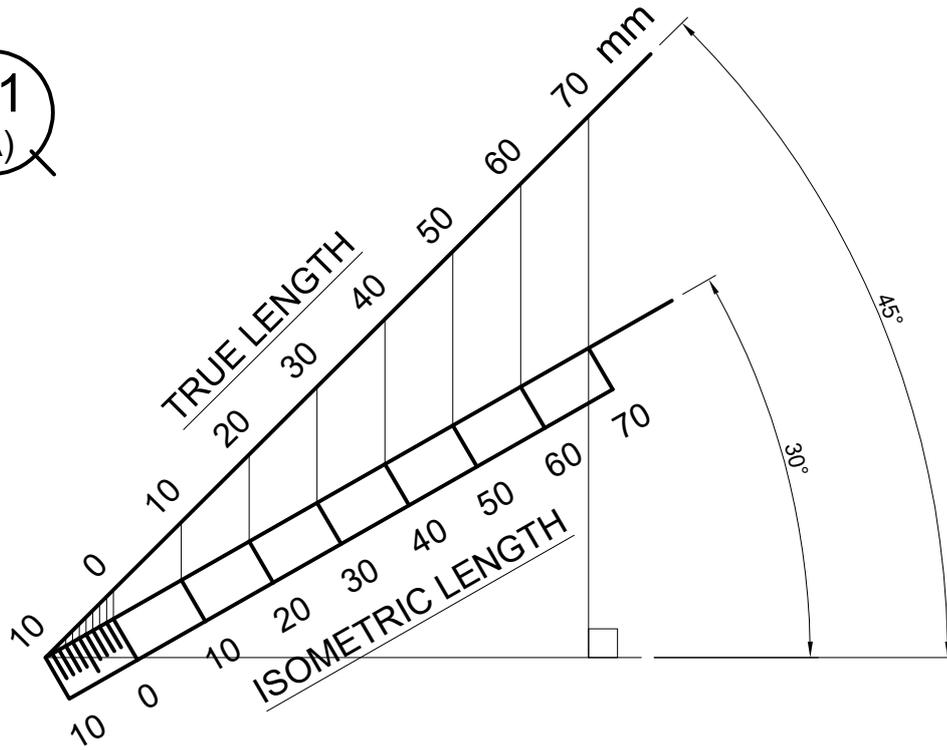
(ii) BUSH

<b>(a) Front view</b>	<b>3</b>
- Two circles	2
- Hidden oil hole ( $\frac{1}{2}$ ), cutting plane ( $\frac{1}{2}$ )	1
<b>(b) Full sectional right side view</b>	<b>3</b>
- Entire outline with two inner horizontal lines (2), oil hole ( $\frac{1}{2}$ )	2 $\frac{1}{2}$
- Hatching lines	$\frac{1}{2}$

**DETAILS** **6**

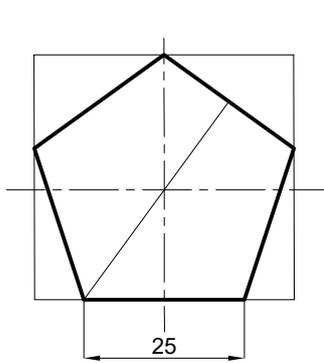
Printing titles (1), Scale used (1), Projection symbol (1), Six important dimensions (3)

21  
(A)

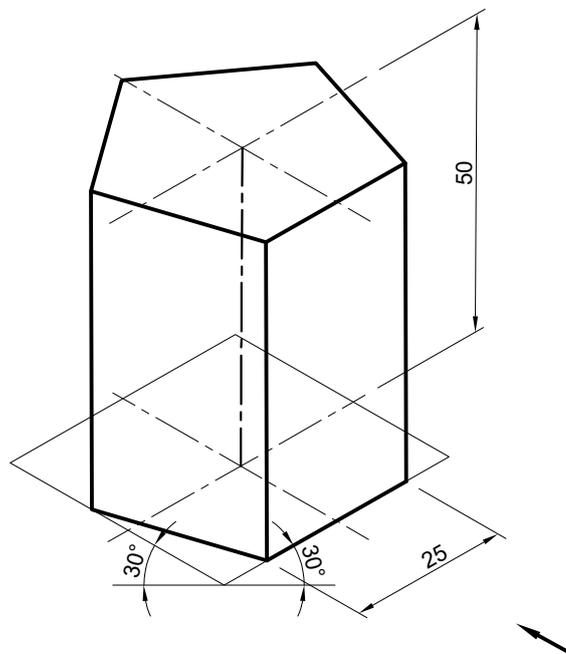


ISOMETRIC SCALE

21  
(B)



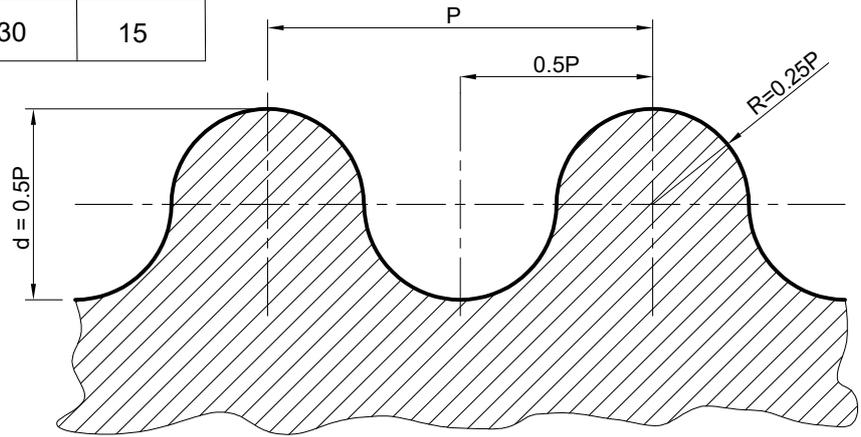
HELPING FIGURE



ISOMETRIC PROJECTION

22  
(A)

P	$d=0.5P$	$R=0.25P$
60	30	15



KNUCKLE THREAD

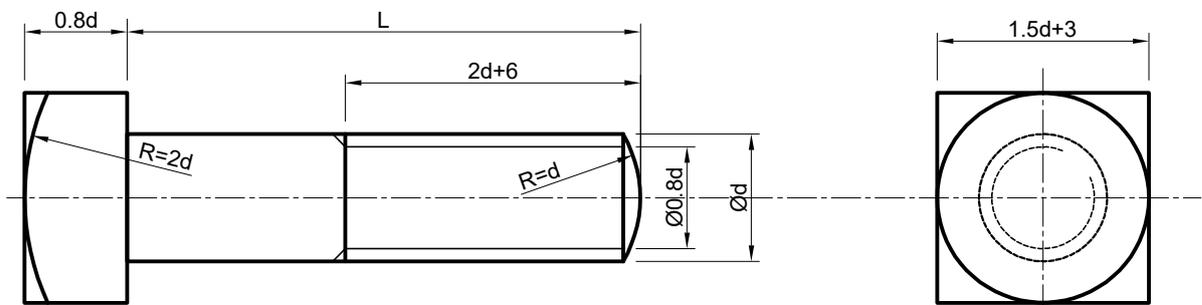
OR

22  
(B)

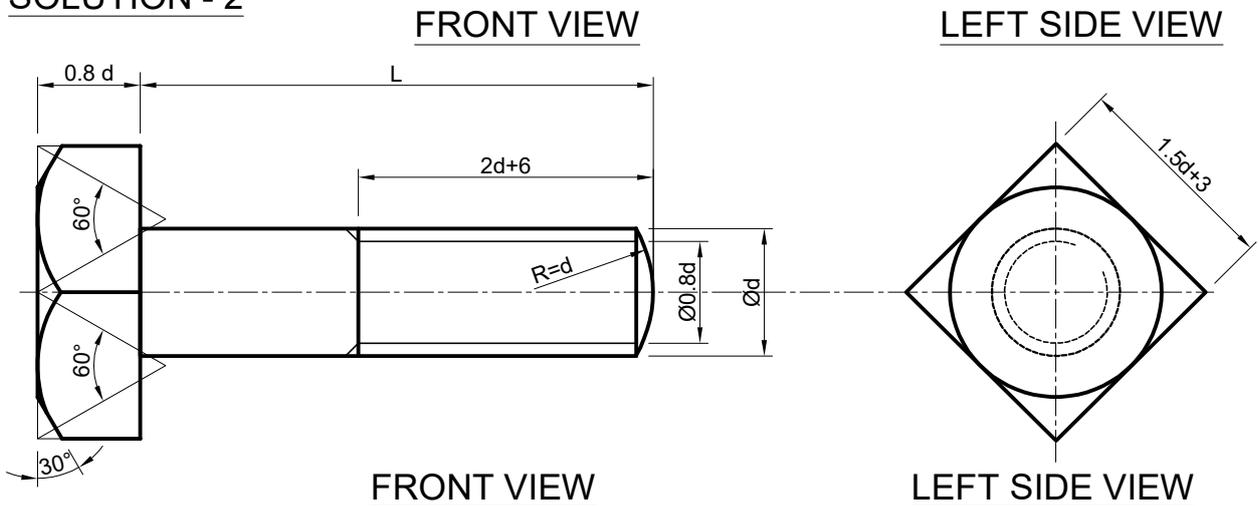
SQUARE HEADED BOLT

d	0.8d	1.5d+3	2d	2d+6	L
20	16	33	40	46	80

SOLUTION - 1



SOLUTION - 2

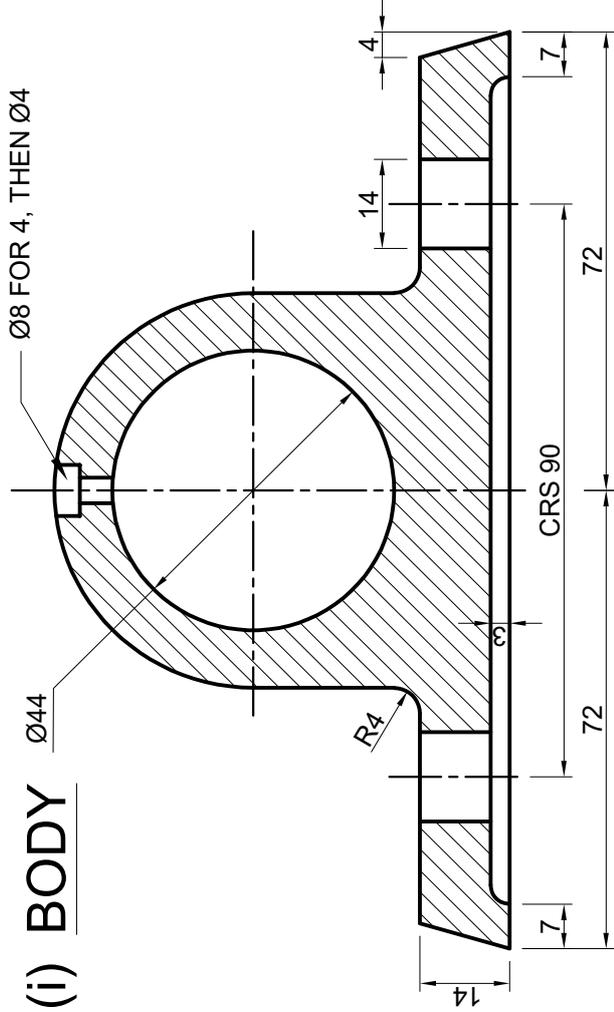




OR

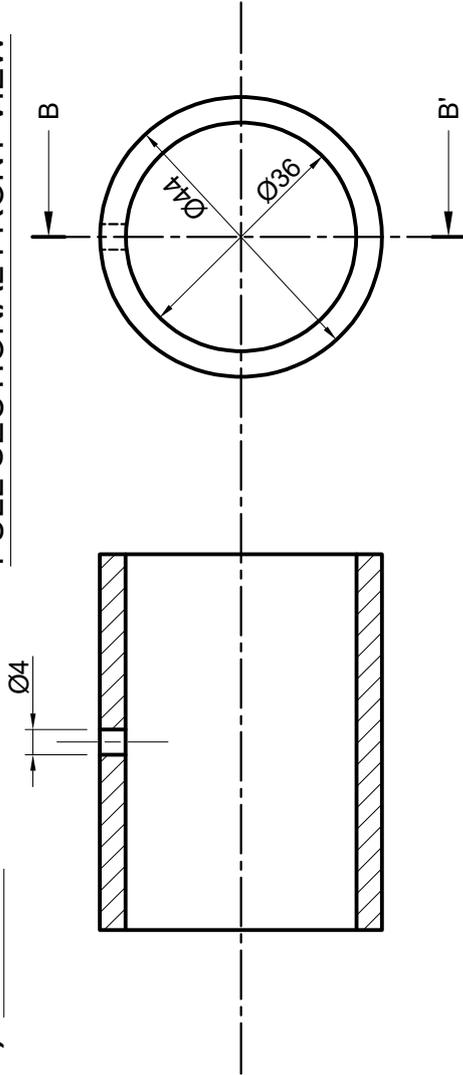
23  
(B)

(i) BODY



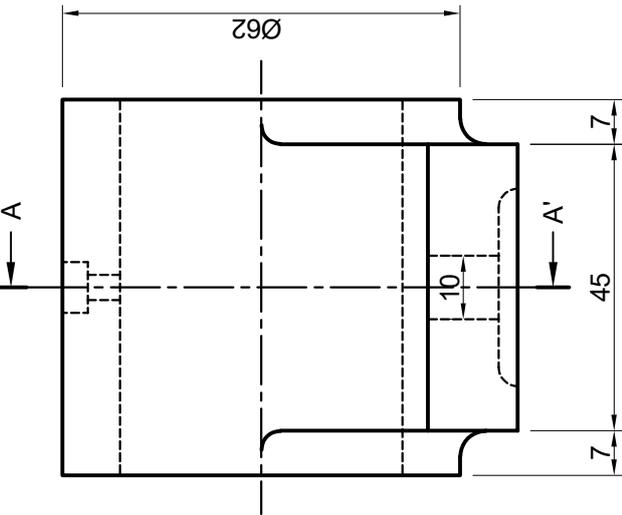
(ii) BUSH

FULL SECTIONAL FRONT VIEW

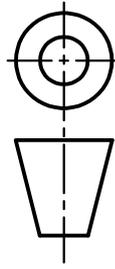


FULL SECTIONAL RIGHT SIDE VIEW

FRONT VIEW



LEFT SIDE VIEW



SCALE 1:1

DISASSEMBLY OF BUSH BEARING