

BGS INSTITUTE OF TECHNOLOGY

DEPARTMENT OF MECHANICAL ENGINEERING

B G S INSTITUTE OF TECHNOLOGY



**COMPUTER AIDED
MACHINE DRAWING MANUAL**

Sub Code:18ME36A/46B

COMPILED BY : NAVEEN S S
Asst. Professor
Dept of Mechanical Engg
BGSIT, B G Nagar

B G S INSTITUTE OF TECHNOLOGY

VISION:

- Producing competent and sustainable Mechanical Engineers through Excellence, Innovations and Ethics.

MISSION:

- M1: Offering quality Education by competent faculty.
- M2: Providing adequate infrastructure and learning ambience.
- M3: Developing inclination towards higher education, research, entrepreneurship and professional ethics.
- M4: Promoting interaction with industries.

PEO'S

- PEO-1: Graduate will pursuing successful career & higher education.
- PEO-2: Graduates will be able to design, analyze, fabricate & manage applications of mechanical engineering.
- PEO-3: Graduates will display professional ethics to work in a team & lead the team by effectively communicating the ideas.
- PEO-4: Graduates will practice lifelong learning

PSO'S

- PSO-1: Ability to acquire competencies in designing, analyzing and evaluating the mechanical components.
- PSO-2: Ability to work professionally by applying manufacturing and management practices.

COMPUTER AIDED MACHINE DRAWING

Subject Code : 18ME36A/46B	IA Marks: 25
No. of Lecture Hrs/Week : 04	Exam Hours: 03
Total no. of Lecture Hrs : 52	Exam Marks: 100

Introduction:

Review of graphic interface of the software. Review of basic sketching commands and navigational commands. Starting a new drawing sheet. Sheet sizes. Naming a drawing, Drawing units, grid and snap. **02 Hours**

PART-A

UNIT1:

Sections of Solids: Sections of Pyramids, Prisms, Cubes, Tetrahedrons, Cones and Cylinders resting only on their bases (No problems on, axis inclinations, spheres and hollow solids), True shape of sections.

Orthographic Views: Conversion of pictorial views into orthographic projections, of simple machine parts with or without section. (Bureau of Indian Standards conventions are to be followed for the drawings) Hidden line conventions, Precedence of lines. **08 Hours**

UNIT 2:

Thread Forms: Thread terminology, sectional views of threads. ISO Metric(Internal & External) BSW (Internal & External) square and Acme. Sellers thread,American Standard thread.

Fasteners: Hexagonal headed bolt and nut with washer (assembly), squareheaded bolt and nut with washer (assembly) simple assembly using stud boltswith nut and lock nut. Flanged nut, slotted nut, taper and split pin for locking,counter sunk head screw, grub screw, Allen screw. **08 Hours**

PART-B

UNIT 3:

Keys & Joints :Parallel key. Taper key, Feather key, Gibhead key and WoodruffKey Riveted Joints: Single and double riveted lap joints, butt joints with single/ double cover straps (Chain and Zigzag, using snap head rivets), cotter joint (socket and spigot), knuckle joint (pin joint) for two rods. **08 Hours**

UNIT 4:

Couplings:

Split Muff coupling, Protected type flanged coupling, pin (bush) type flexible coupling, Oldham's coupling and universal coupling (Hooks'Joint) **08 Hours**

PART - C

Assembly Drawings

(Part drawings should be given)

1. Plummer block (Pedestal Bearing)
2. Rams Bottom Safety Valve 3.1.C. Engine connecting rod
4. Screw jack (Bottle type)

5. Tailstock of lathe
6. Machine vice
7. Tool Head of a shaper

18 Hours**Text Books:**

1. 'A Primer on Computer Aided Machine Drawing-2007', Published byVTU, Belgaum.
2. 'Machine Drawing', N.D.Bhat&V.M.Panchal

Reference Books:

1. 'A Text Book of Computer Aided Machine Drawing', S. Trymbaka Murthy, CBS Publishers, New Delhi, 2007
2. 'Machine Drawing', K.R. Gopala Krishna, Subhash Publication.
3. 'Machine Drawing with Auto CAD', GoutamPohit&GouthamGhosh, 1st Indian print Pearson Education, 2005
4. Auto CAD 2006, for engineers and designers'. Sham Tickoo. Dream tech 2005
5. 'Machine Drawing', N. Siddeshwar, P. Kanniah, V.V.S. Sastri, published by Tata McGraw Hill.2006

NOTE:**Internal assessment: 25 Marks**

All the sheets should be drawn in the class using software. Sheet sizes should be A3/A4. All sheets must be submitted at the end of the class by taking printouts.

Scheme of Examination:

Two questions to be set from each Part-A, Part-B and Part-C. Student has to answer one question each from Part-A and Part-B for 20 marks each and one question from Part-C for 60 marks.

i.e.

PART-A	1 x 20	=20 Marks
PART-B	1 x 20	=20 Marks
PART-C	1 x 60	=60 Marks
Total		=100 Marks

COMPUTER AIDED MACHINE DRAWING (18ME36A/46B)

COURSE OBJECTIVES

This course is designed to meet the following objectives:

- 1) Train students to use a commercial solid modeling package.
- 2) Introduce the students to draw the views of some aircraft components and other mechanical elements.
- 3) To learn the basic concepts and to draw the views of section of solids, orthographic projections and threaded fasteners.
- 4) This course will give the insight into the design, creation of assembly and get the detailed drawing of machine components.
- 5) This course will also introduce students to draw riveted joints, threaded fasteners and couplings.

COURSE OUTCOMES

Upon completion of this course, students are expected to get:

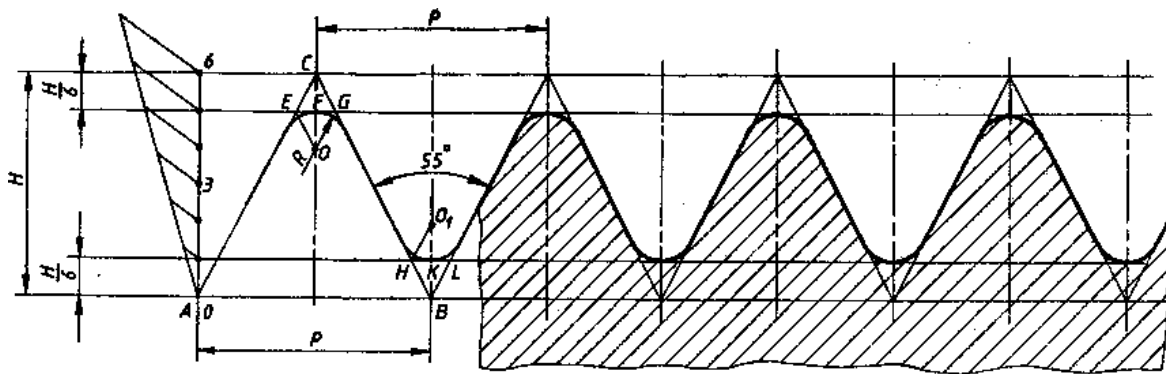
- 1) Ability to use standard software tools to create part assemblies and check for clearances.
- 2) Ability to create fully constrained solid models that can be quickly modified using standard software tools.
- 3) Ability to use, identify and explain standard features in solid modeling including protrusions, revolutions, cutouts, and patterns
- 4) Ability to use standard software tools to create engineering drawings, or other documents, to fully describe the geometries and dimensions of parts, as well as to document assemblies according to standard practice.
- 5) Demonstrate standards of part and assembly creation allowing an adaptable design of a medium size project

UNIT 2:

THREAD FORMS

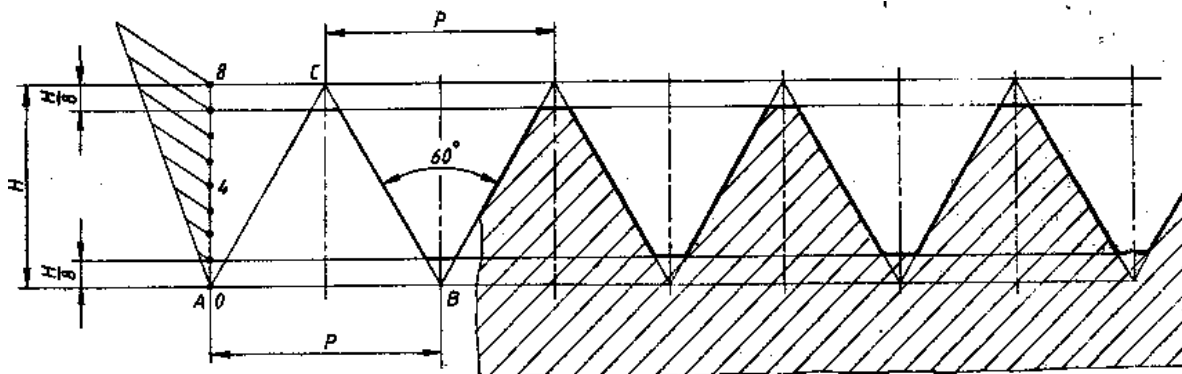
Whitworth Thread (British Standard)

Draw Whitworth Thread (British Standard) taking pitch, $P = 30\text{mm}$. Show at least three threads.



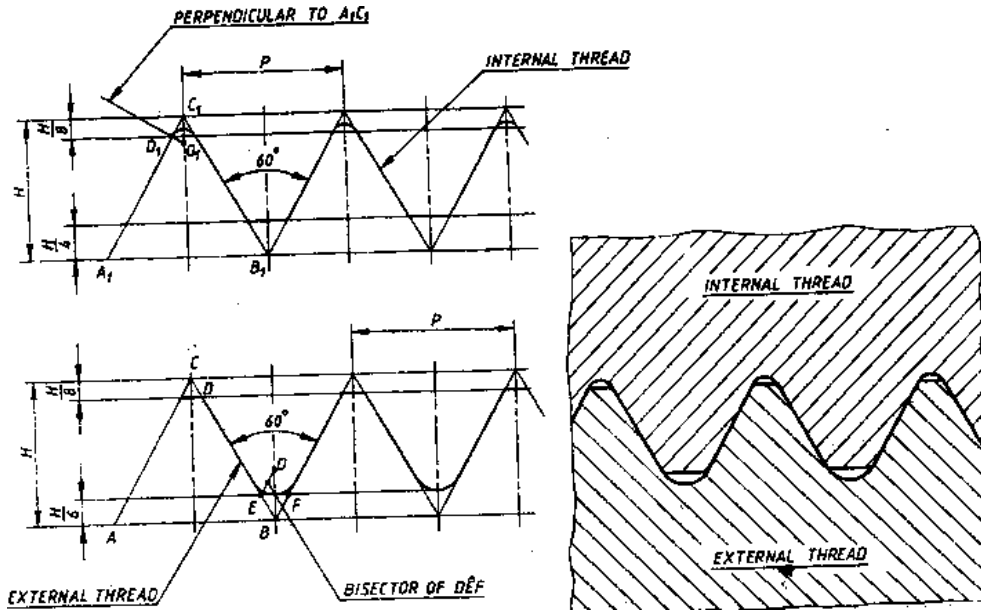
Sellers Thread (American Standard)

Draw Sellers Thread (American Standard) taking pitch, $P = 30\text{mm}$. Show at least three threads.



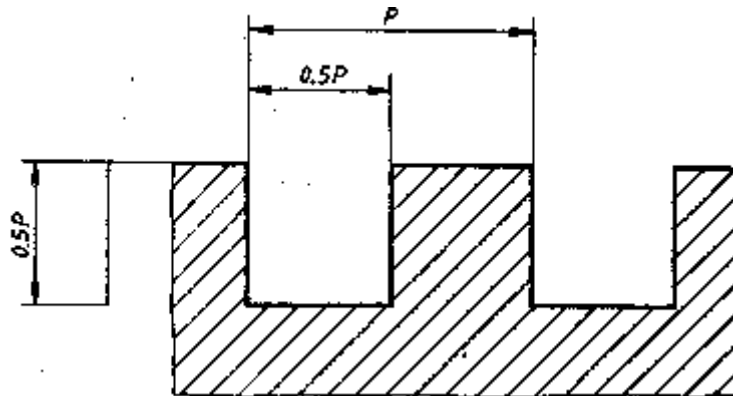
ISO Thread (Indian Standard) - Internal and external

Draw the ISO thread (Both internal and External) taking pitch, $P = 30\text{mm}$. Show at least three threads.



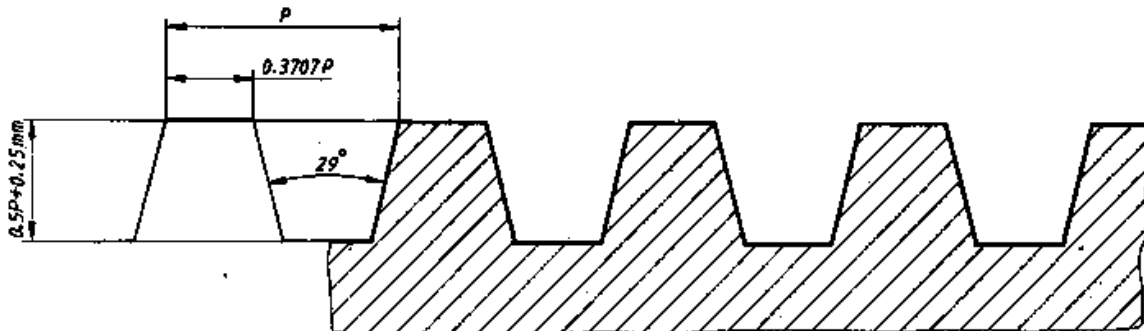
Basic Form of Square Thread

Draw Square Thread taking pitch, $P = 30\text{mm}$. Show at least three threads.



Acme Thread

Draw Acme Thread taking pitch, $P = 30\text{mm}$. Show at least three threads.



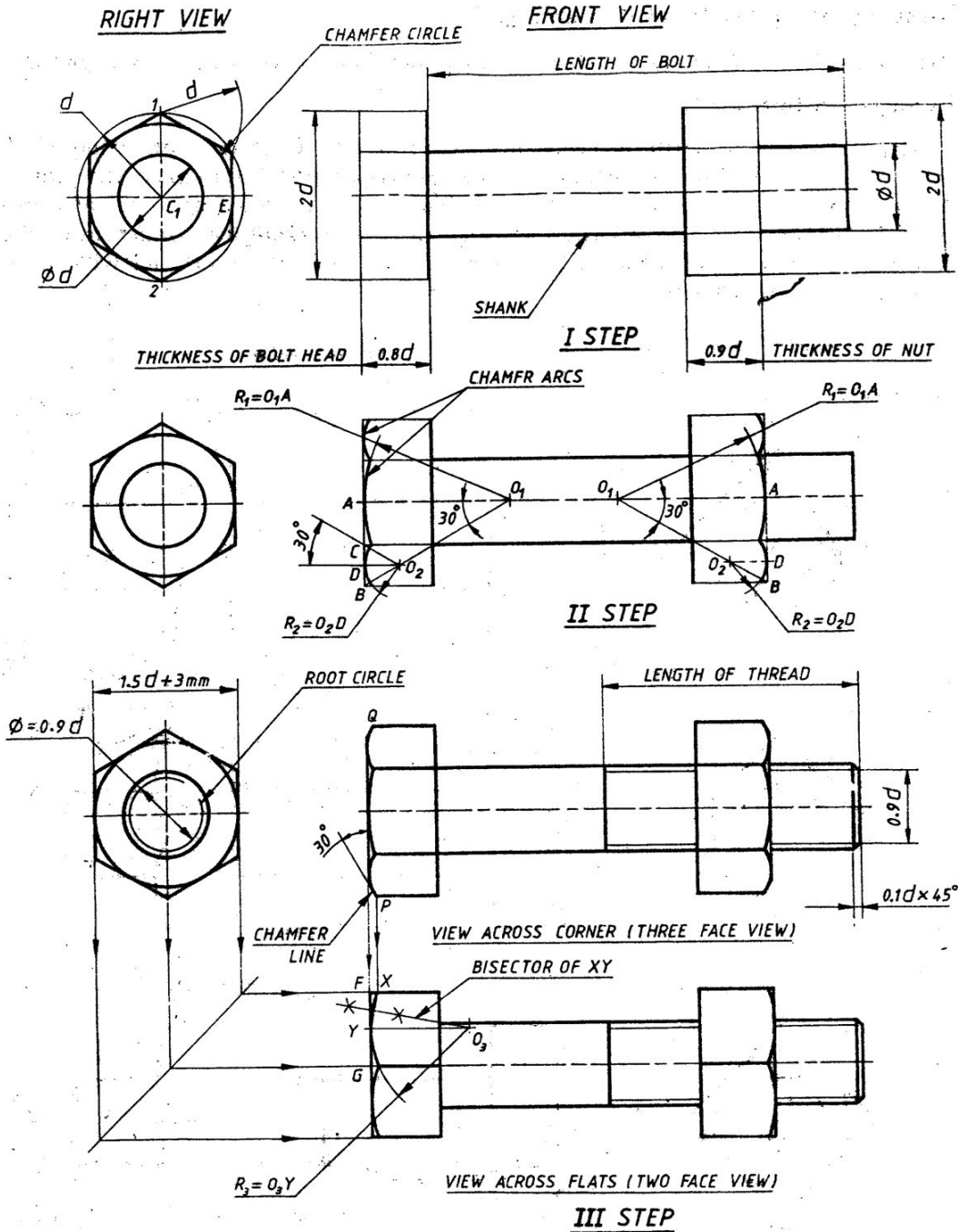
FASTENERS

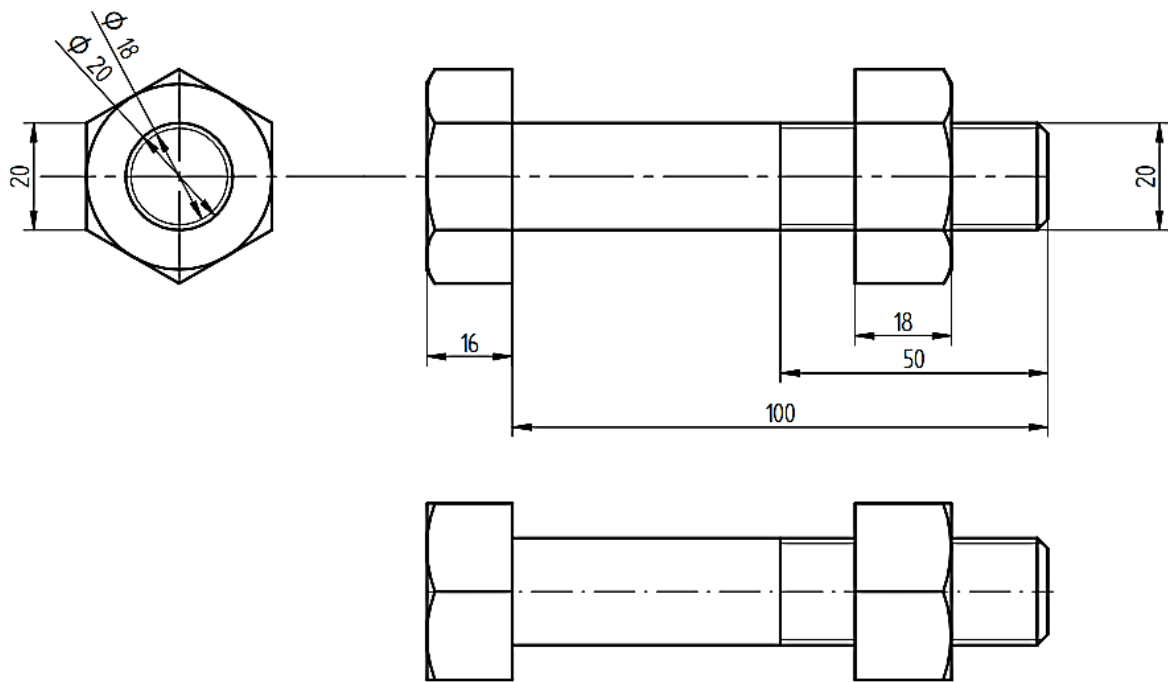
Table gives Empirical Proportions of Hexagon and Square Head Bolt & Nut

Nominal Diameter	d, Size of Bolt or Nut, mm
Width Across Flats	$1.5d + 3\text{mm}$
Width Across Corners	$2d$
Thickness of Bolt Head	$0.8d$
Thickness of Nut	$0.9d$
Root Diameter	$0.9d$ (approximate)
Length of Bolt	As specified
Thread Length	$2d + 6\text{mm}$ (for $l < 150\text{mm}$) $2d + 12\text{mm}$ (for $l > 150\text{mm}$)
Chamfer of Bolt End	Depth of Thread x 45° or $0.1d$ (Approximate)
Chamfer Angle of Bolt Head & Nut	30°

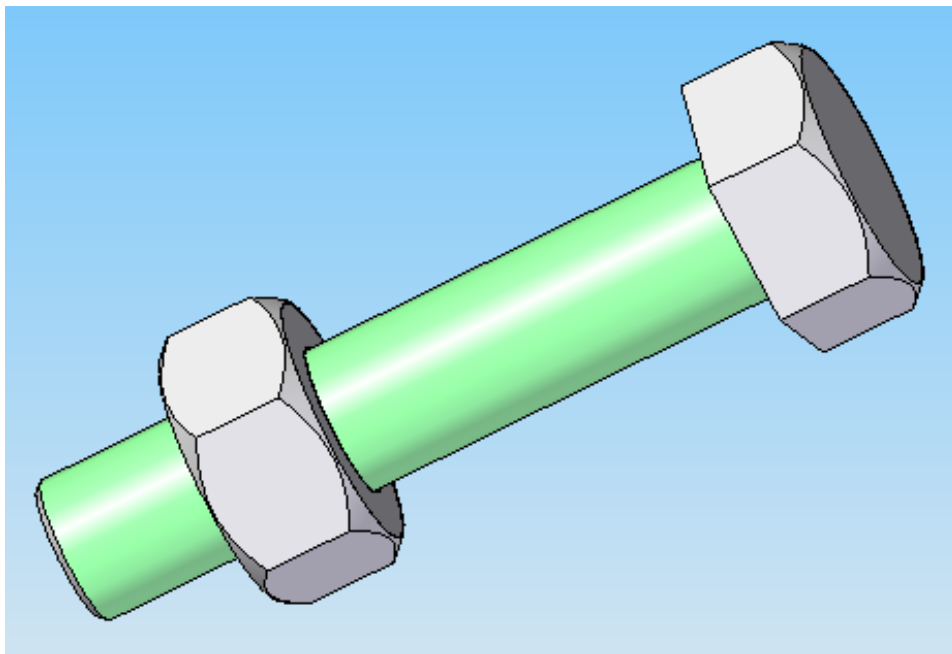
Exercise.1

Draw the three views of ISO threaded hexagonal bolt 100mm long, 20mm diameter and a thread length of 50mm and hexagonal nut assembly in the axis horizontal position .Indicate all the proportions and the actual dimensions.



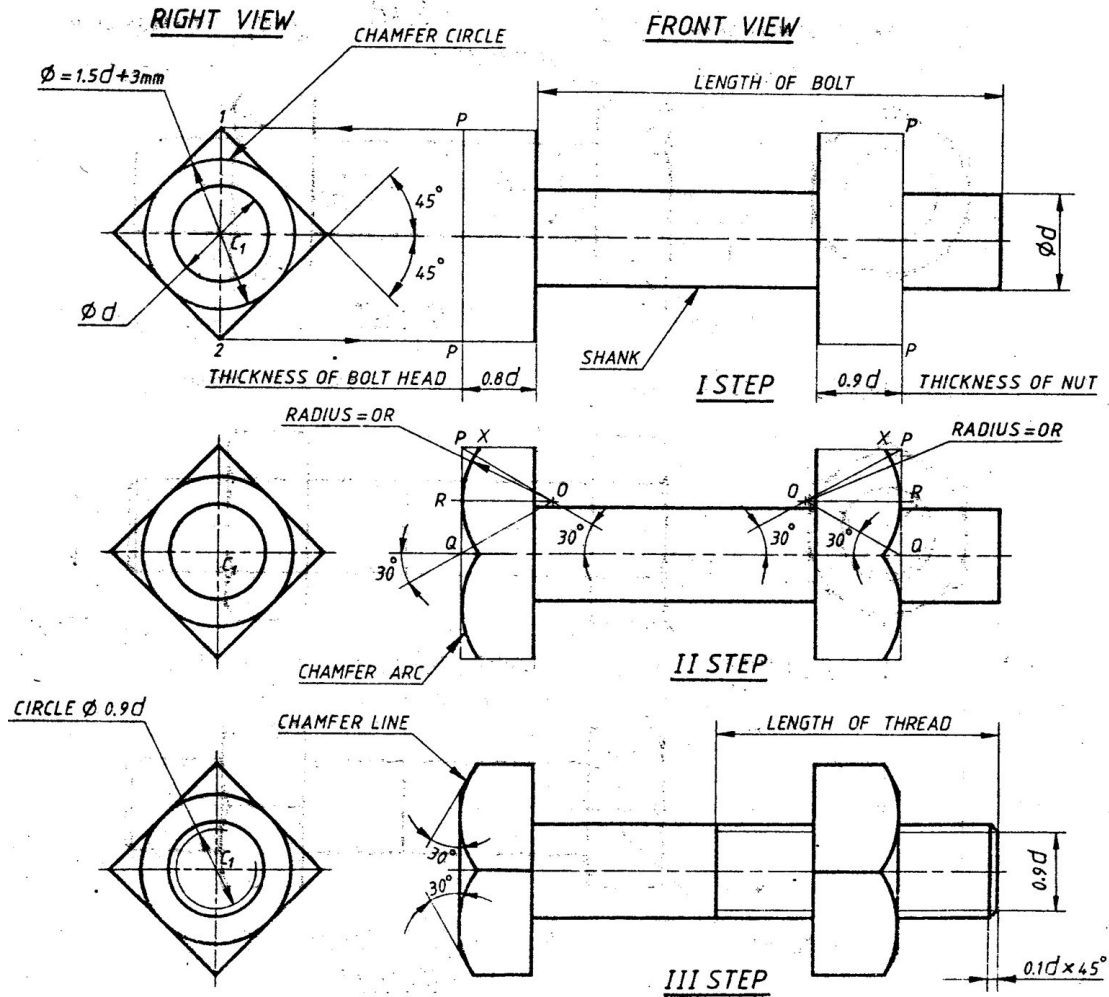


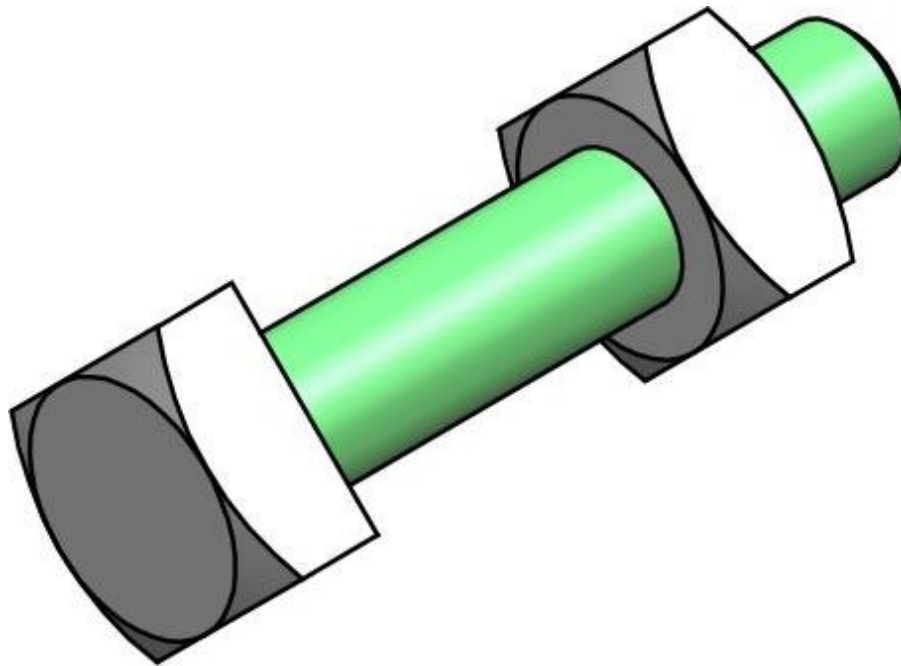
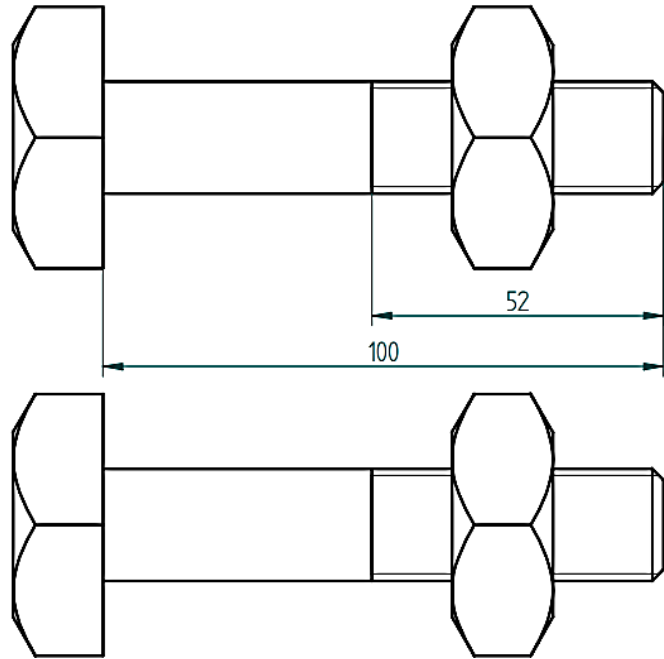
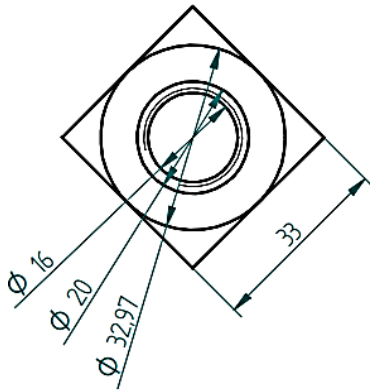
Hexagonal Headed Bolt with Nut



Exercise.2

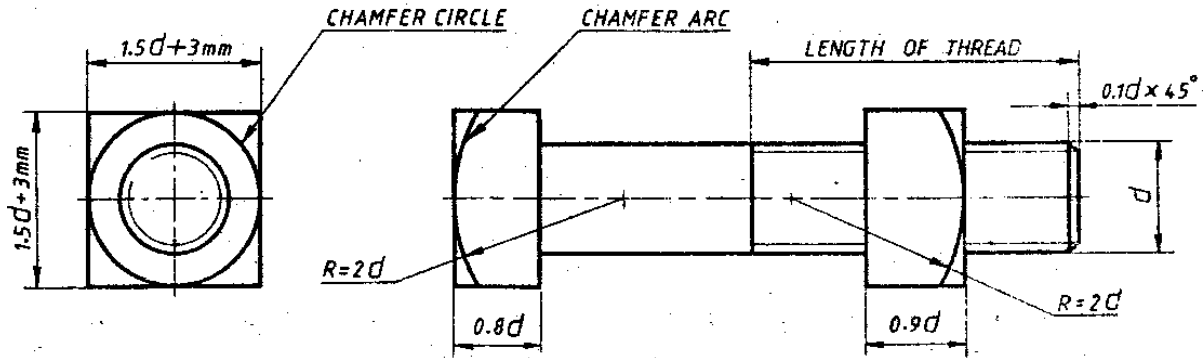
Draw the three views of ISO threaded square bolt 100 mm long, 20 mm diameter and a thread length of 50mm and square nut assembly in the axis horizontal position. Show the assembly of bolt and nut in the view across corners across corners. Indicate all the proportions and the actual dimensions.





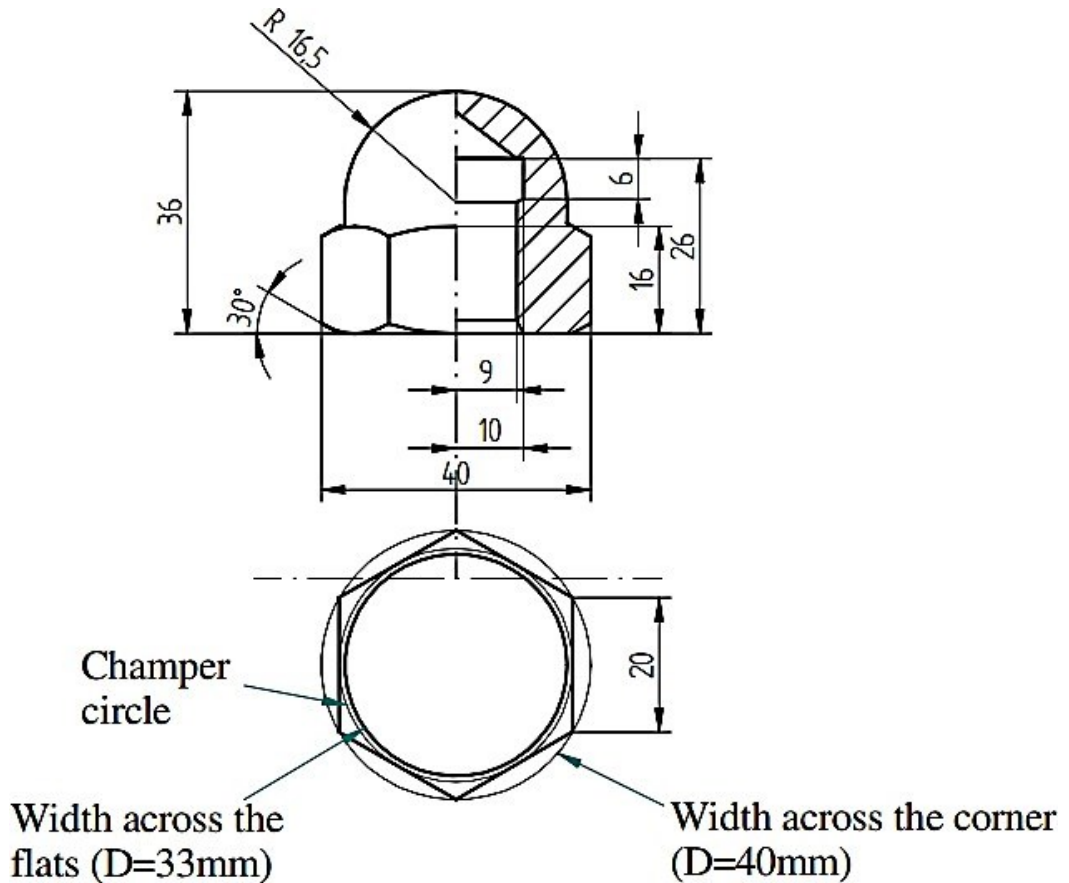
Exercise.3

Draw the two views of ISO threaded square bolt 100 mm long, 20 mm diameter and a thread length of 50 mm and square nut assembly in the axis horizontal position. Show the assembly of bolt and nut in the view across flats. Indicate all the proportions and the actual dimensions.



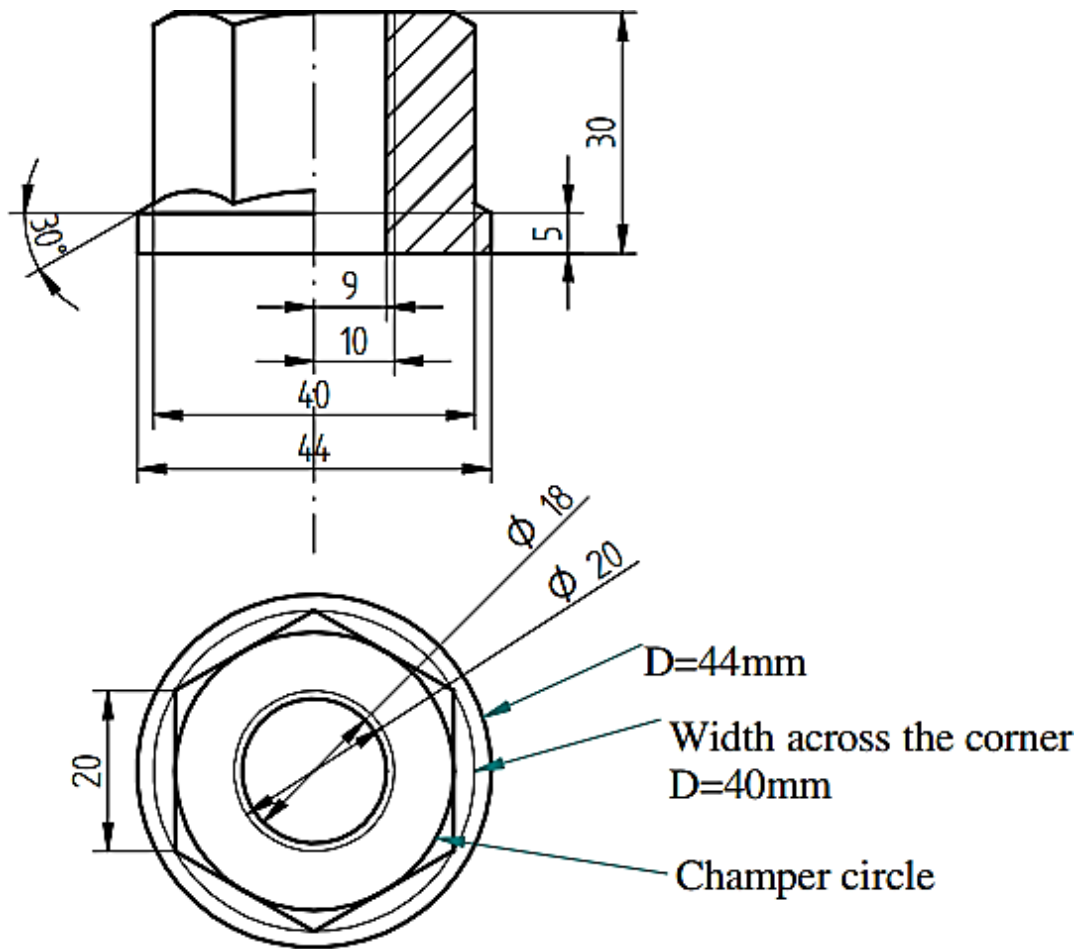
Exercise. 4:

Draw the two views of dome nut taking $d=20\text{mm}$



Exercise. 5:

Draw the two views of flange nut taking $d=20\text{mm}$

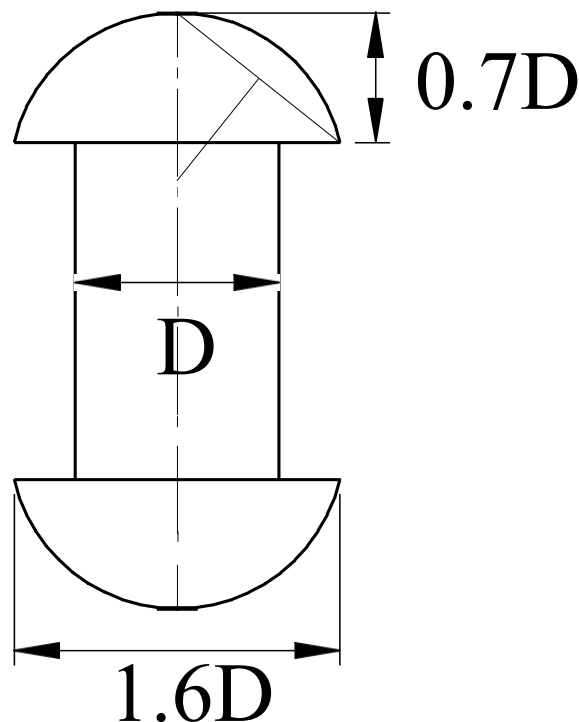


UNIT 3:

RIVETED JOINTS

Table gives Empirical Proportions for Riveted Joints. All Dimensions in mm

S.N.	Particulars	Empirical Formulae
1.	Diameter of Rivet	$d = 6\sqrt{t}$, t =thickness of the plate
2.	Longitudinal Pitch	$p = 3d$
3.	Distance of Centre of the Rivet from edge of the Plate	$= 1.5d$
4.	Margin	$m = d$
5.	Transverse Pitch	$p_t = 0.8p$ for Chain Riveting
		$p_t = 0.6p$ for Zig-zag Riveting
6.	Thickness of Straps or Cover Plates	
	(i) Single Cover Plate	$t_1 = 1.125t$
	(ii) Double Cover Plates	$t_2 = 0.7$ to $0.8t$



SNAP HEAD RIVET

Draw to 1 :1 scale, the top and front views of a single riveted lap joint. The thickness of the plates is 9 mm. Show at-least three rivets. Indicate all the dimensions. Use snap head rivets.

$$t = 9 \text{ mm}$$

$$d = 6\sqrt{t}$$

$$= 6\sqrt{9}$$

$$= 18 \text{ mm}$$

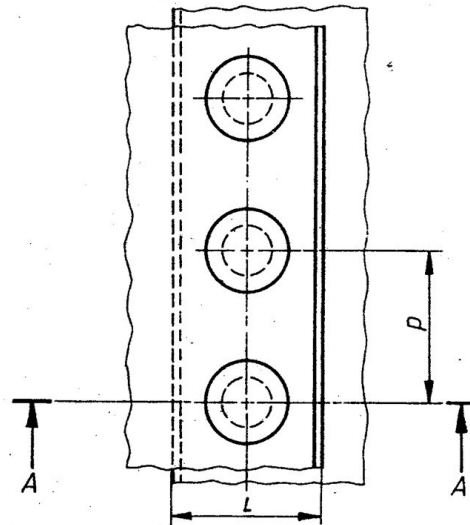
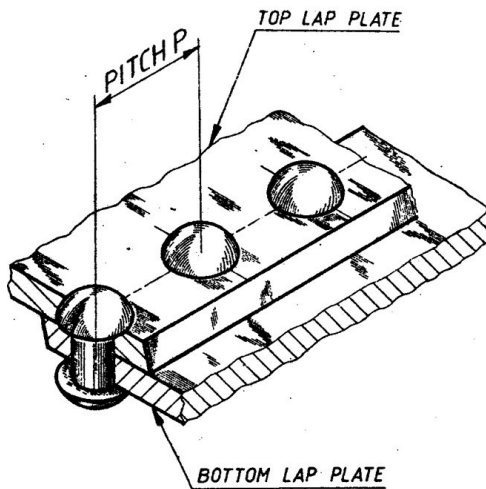
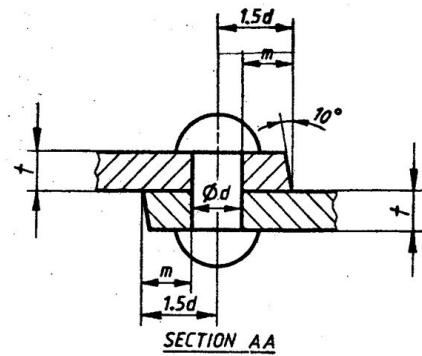
$$p = 3d$$

$$= 3 \times 18$$

$$= 54 \text{ mm}$$

$$1.5d = 1.5 \times 18$$

$$= 27 \text{ mm}$$



Draw to 1:2 scale the top and sectional front views of a double riveted lap joint with (i) Chain and (ii) Zig-zag riveting. The thickness of the plates is 9 mm. Show atleast three rivets in each row. Indicate all the dimensions. Use snap head rivets.

Solution:

Fig. A shows Chain Riveting;

$$t = 9 \text{ mm}$$

$$d = 6\sqrt{t}$$

$$= 6\sqrt{9}$$

$$= 18 \text{ mm}$$

$$p_1 = 0.8p \text{ for Chain Riveting}$$

$$= 0.8 \times 54 = 43.2 \text{ mm}$$

Fig. B shows Zig-zag Riveting

$$p = 3d$$

$$= 3 \times 18$$

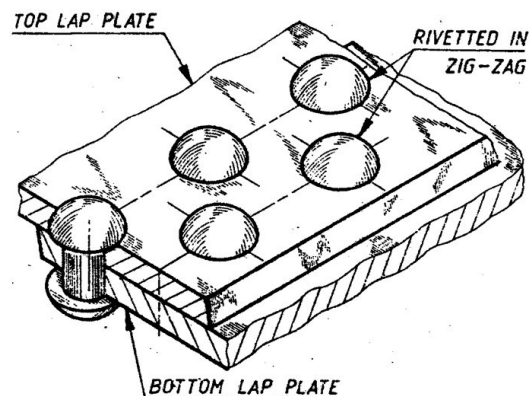
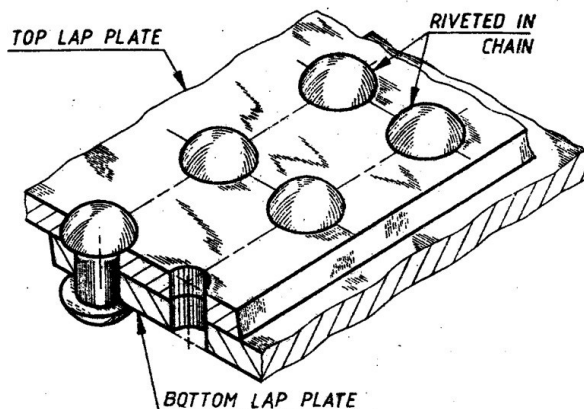
$$= 54 \text{ mm}$$

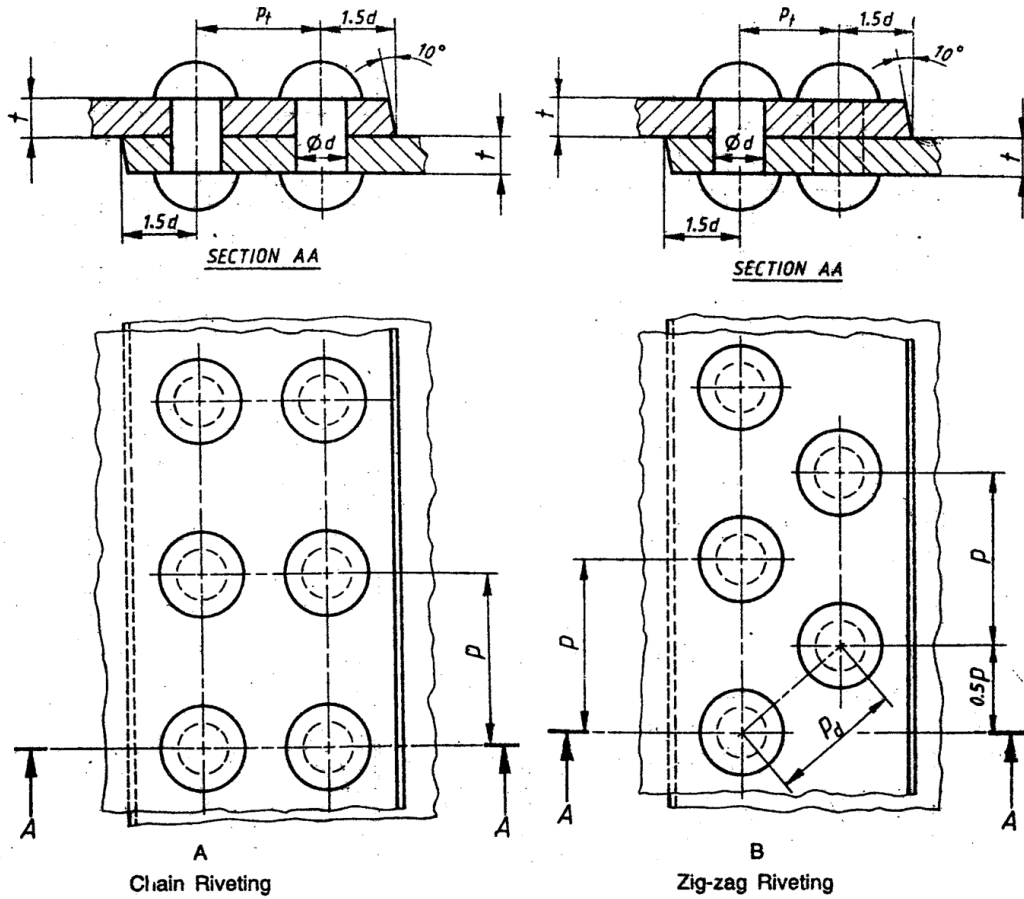
$$1.5d = 1.5 \times 18$$

$$= 27 \text{ mm}$$

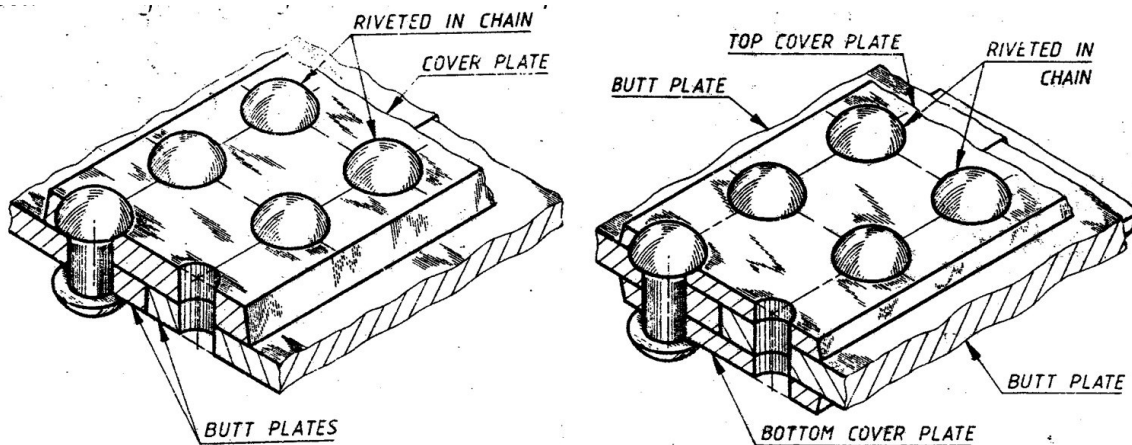
$$p_1 = 0.6p \text{ for Zig-zag Riveting}$$

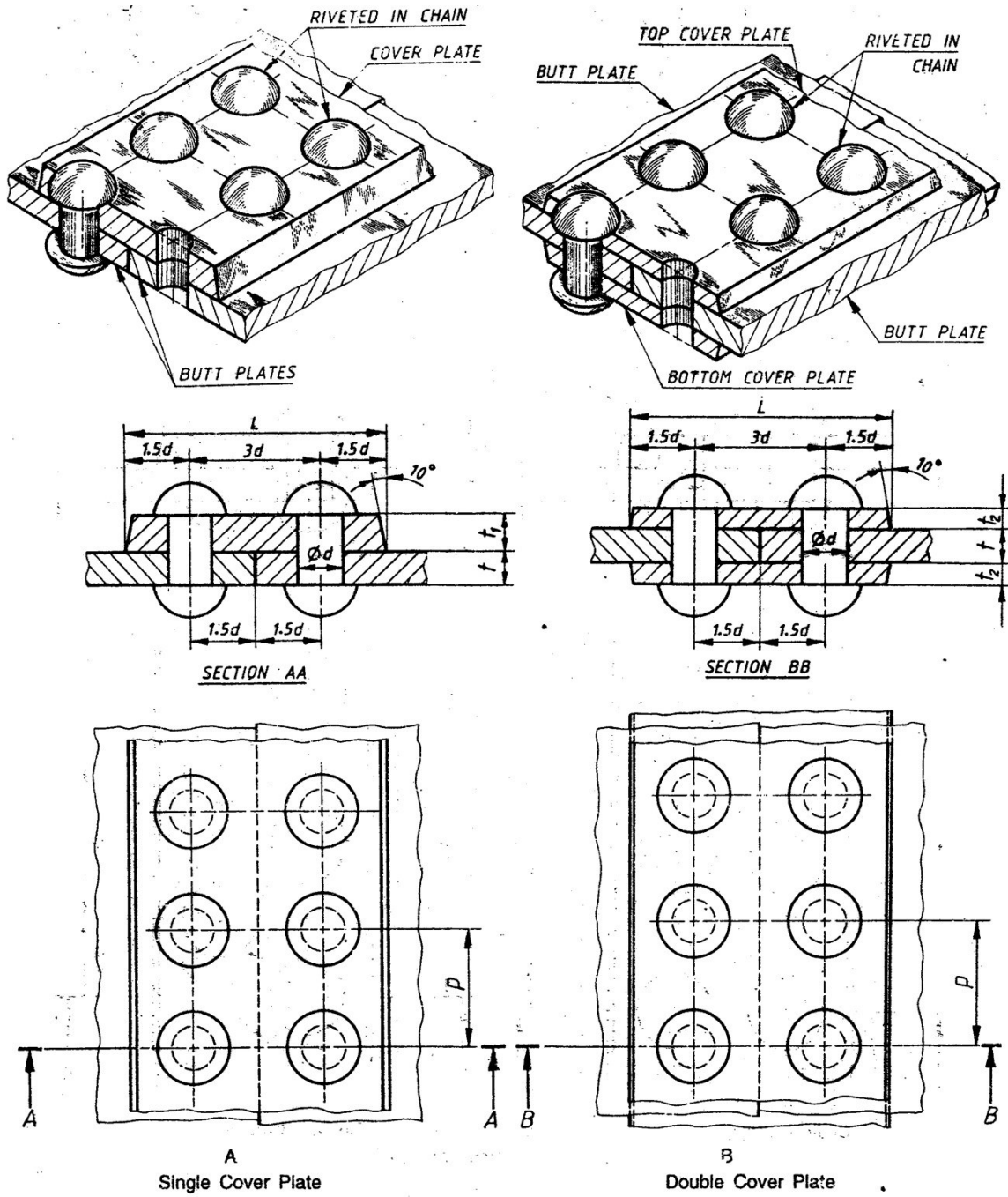
$$= 0.6 \times 54 = 32.4 \text{ mm}$$

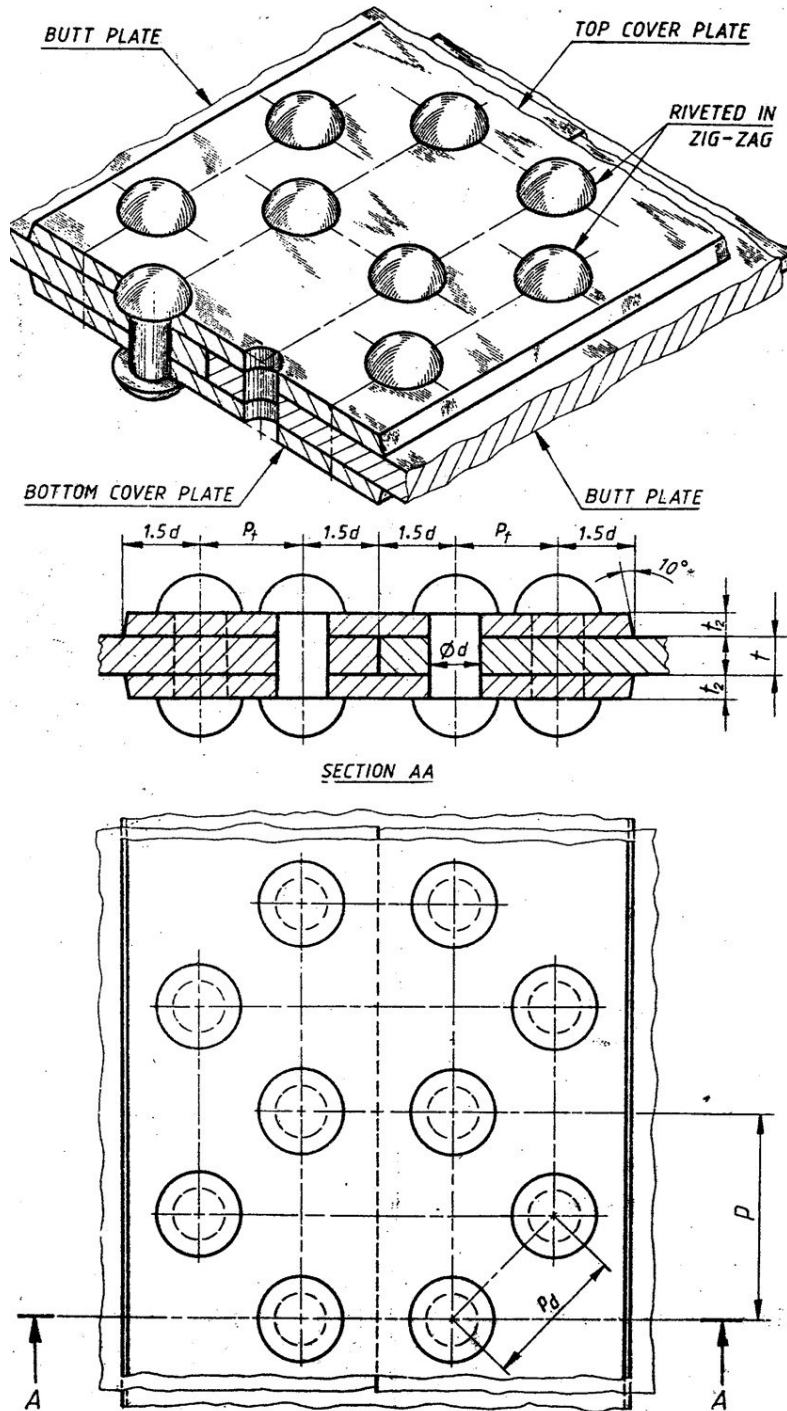




Draw to 1:1 scale, the top and sectional front views of a single riveted butt joint with (i) Single cover plate and (ii) Double cover plate. The thickness of the plates is 9 mm. Show at least three rivets in each row. Indicate all the dimensions. Use snap head rivets.







Thickness of Plates :

$$t = 14 \text{ mm}$$

Diameter of Rivet :

$$\begin{aligned} d &= 6\sqrt{t} \\ &= 6\sqrt{14} \\ &= 22 \text{ mm} \end{aligned}$$

Longitudinal Pitch :

$$\begin{aligned} p &= 3d \\ &= 3 \times 22 \\ &= 66 \text{ mm} \end{aligned}$$

Distance from Edge of Plate :

$$\begin{aligned} 1.5d &= 1.5 \times 22 \\ &= 33 \text{ mm} \end{aligned}$$

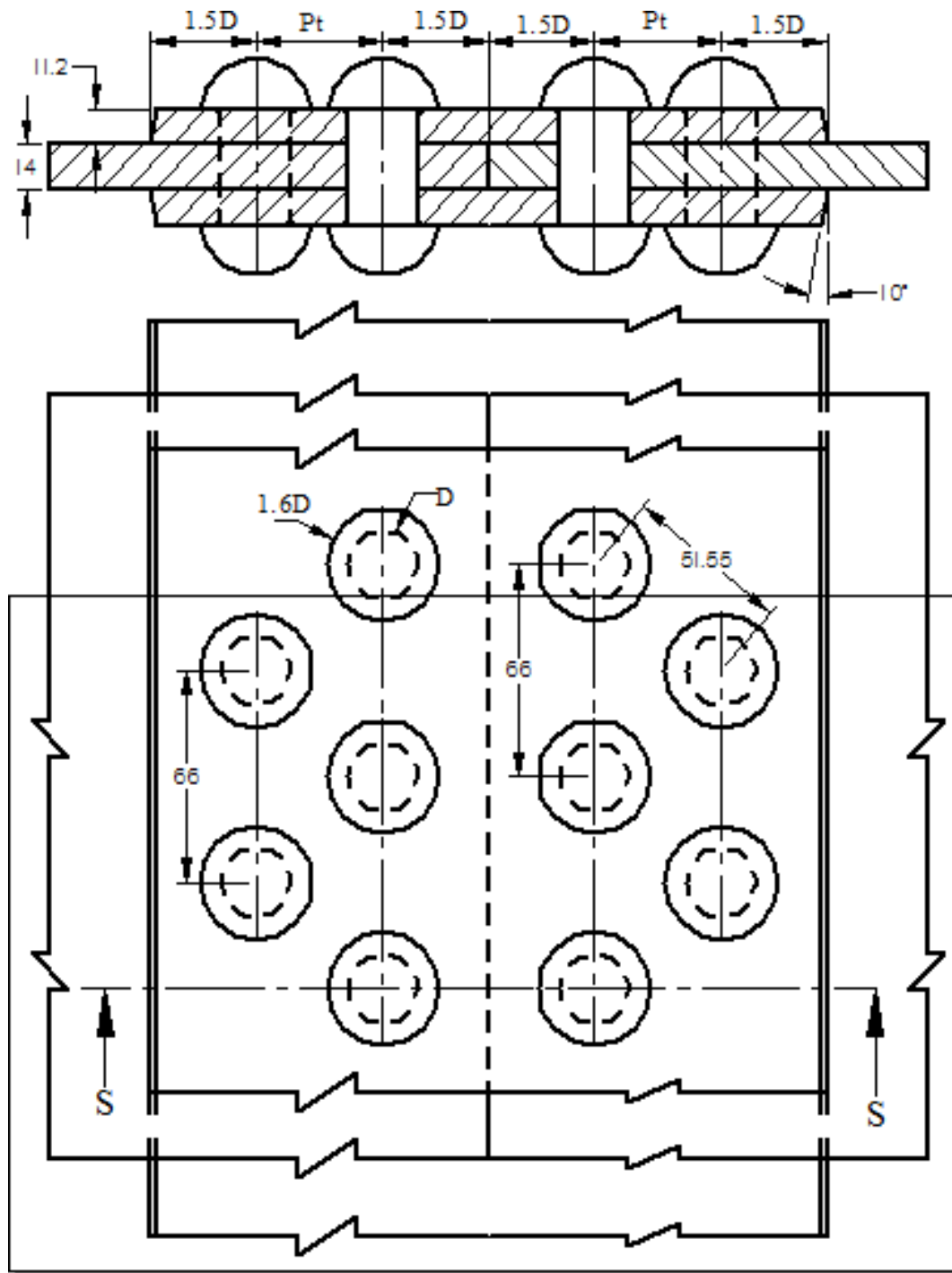
Transverse Pitch :

$$\begin{aligned} p_t &= 0.6p \\ &= 0.6 \times 66 \\ &= 39.6 \text{ mm} \end{aligned}$$

Thickness of Cover Plates :

$$\begin{aligned} t_2 &= 0.8t \\ &= 0.8 \times 14 \\ &= 11.2 \text{ mm} \end{aligned}$$

Create the following view in A2 sheet



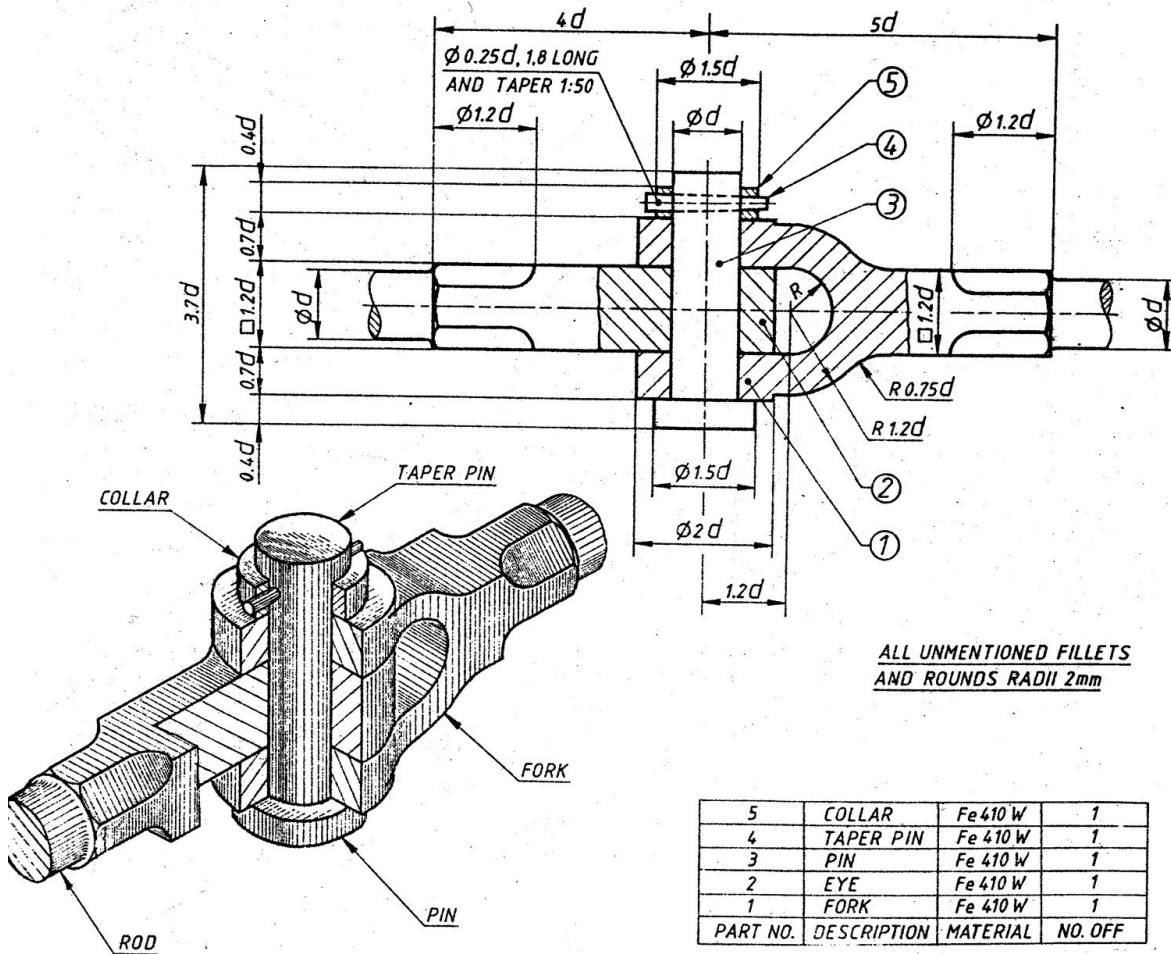
COTTER AND KNUCKLE JOINTS

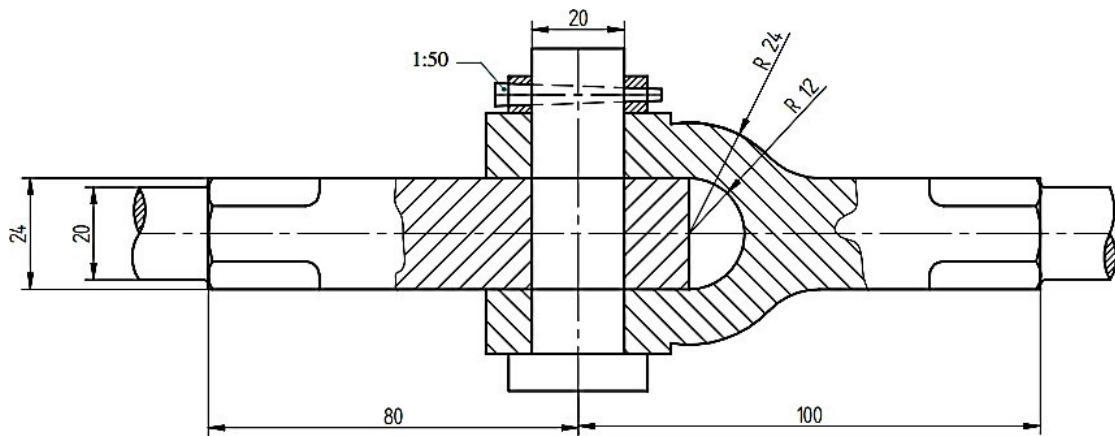
KNUCKLE JOINT

Draw the following views an assembled knuckle joint to 1:1 scale assuming the diameter of the rods $d = 20\text{mm}$.

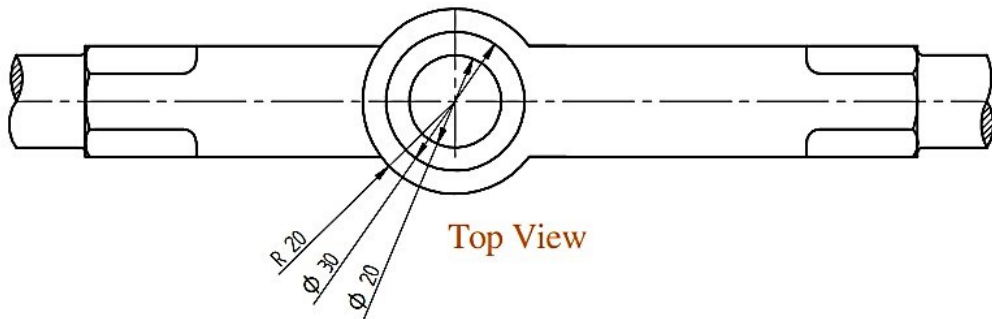
1. Front view with top half in section,
2. Top view,
3. A view from the eye end of the rod.

Indicate the important assembly dimensions and write the item list.



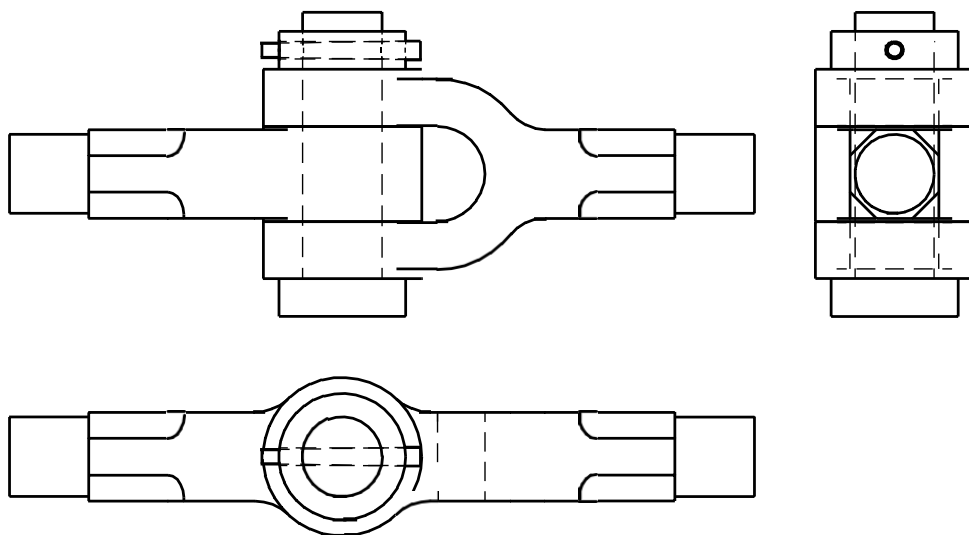


front View in Full section



Top View

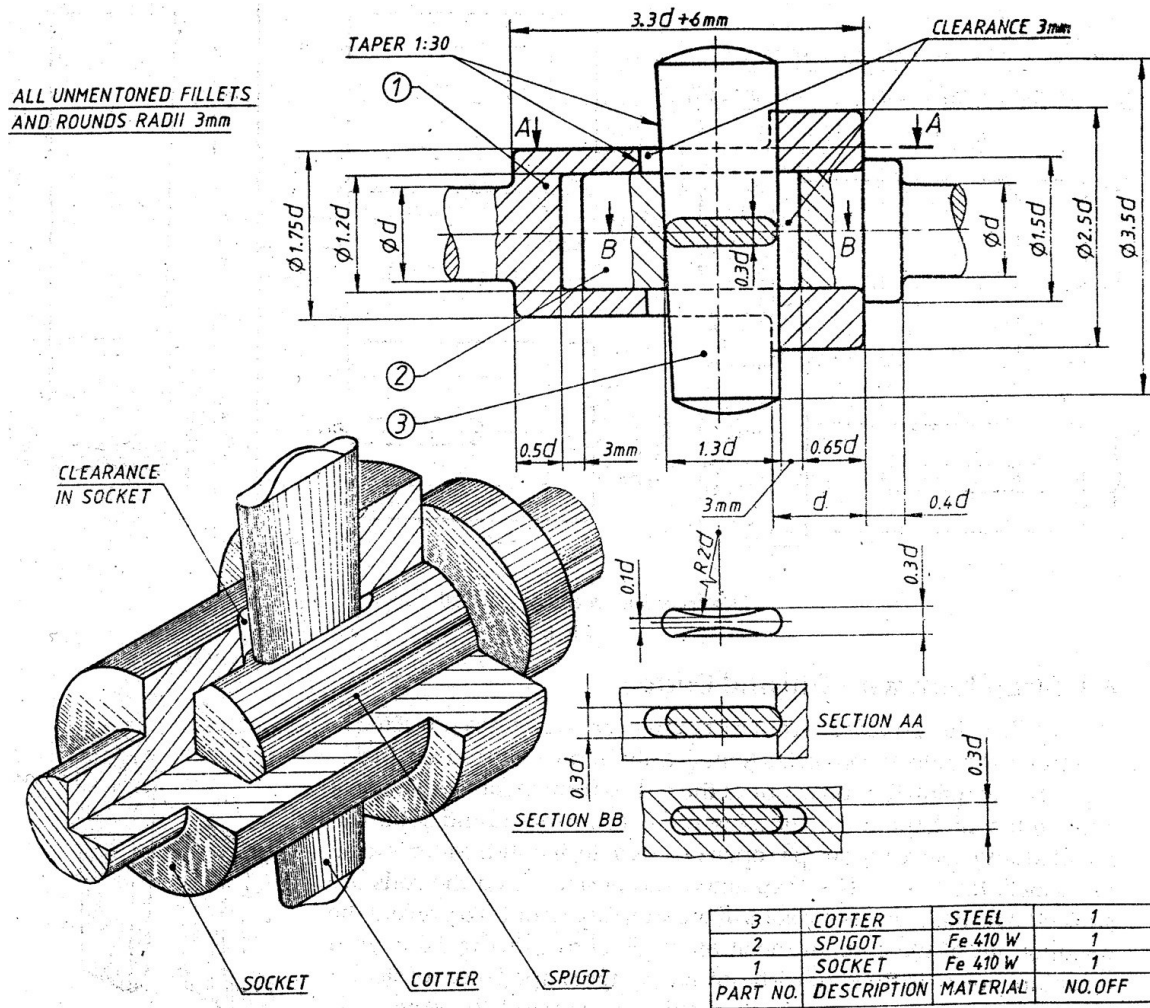
Knuckle Joint

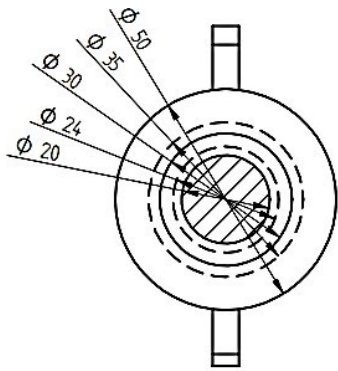


COTTER JOINT

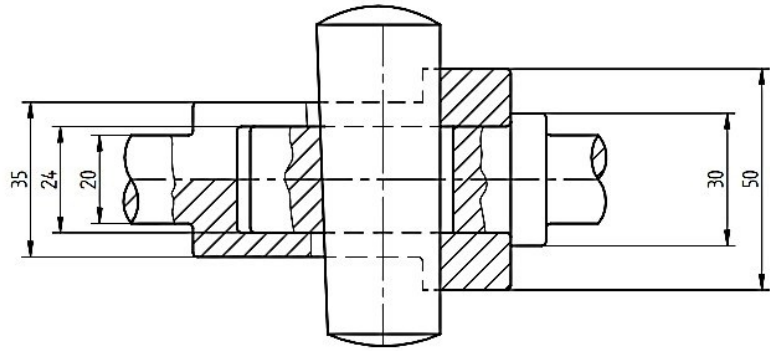
Draw the following views of an assembled Socket and Spigot Cotter Joint to 1:1 scale assuming the diameter of the rods $d=20\text{mm}$.

1. Front view in half section,
2. Top view,
3. A view looking from socket end.



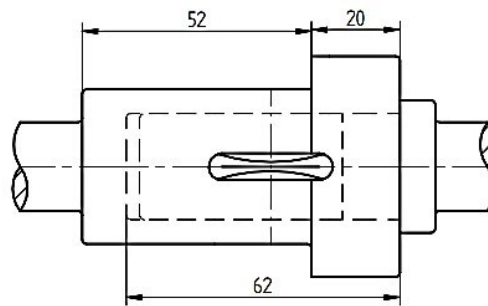


Side View from spigot end



Front View in full section

**Socket and Spigot
Cotter Joint**



Top View

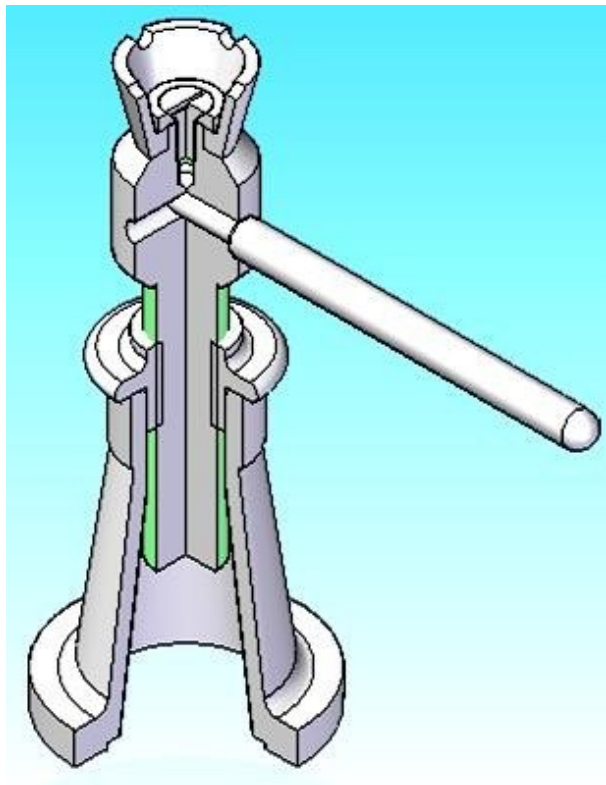
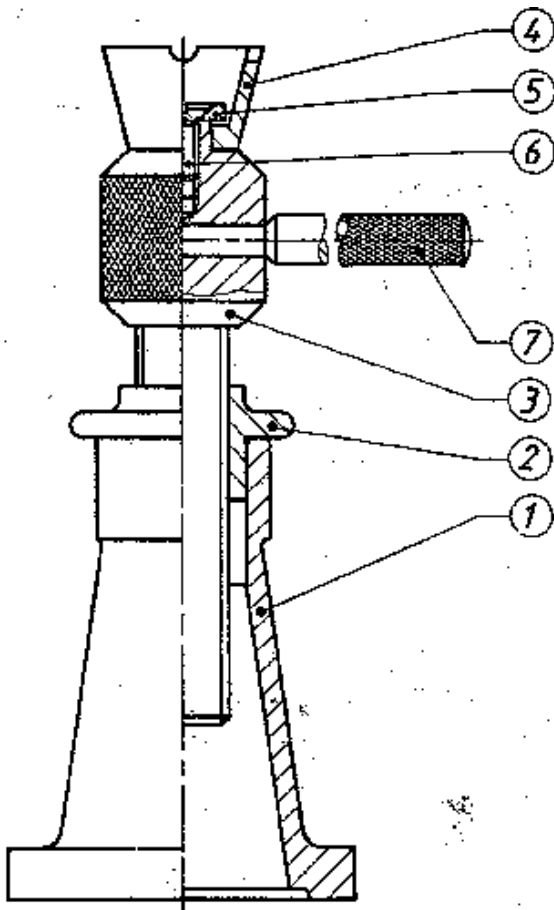
ASSEMBLY DRAWINGS

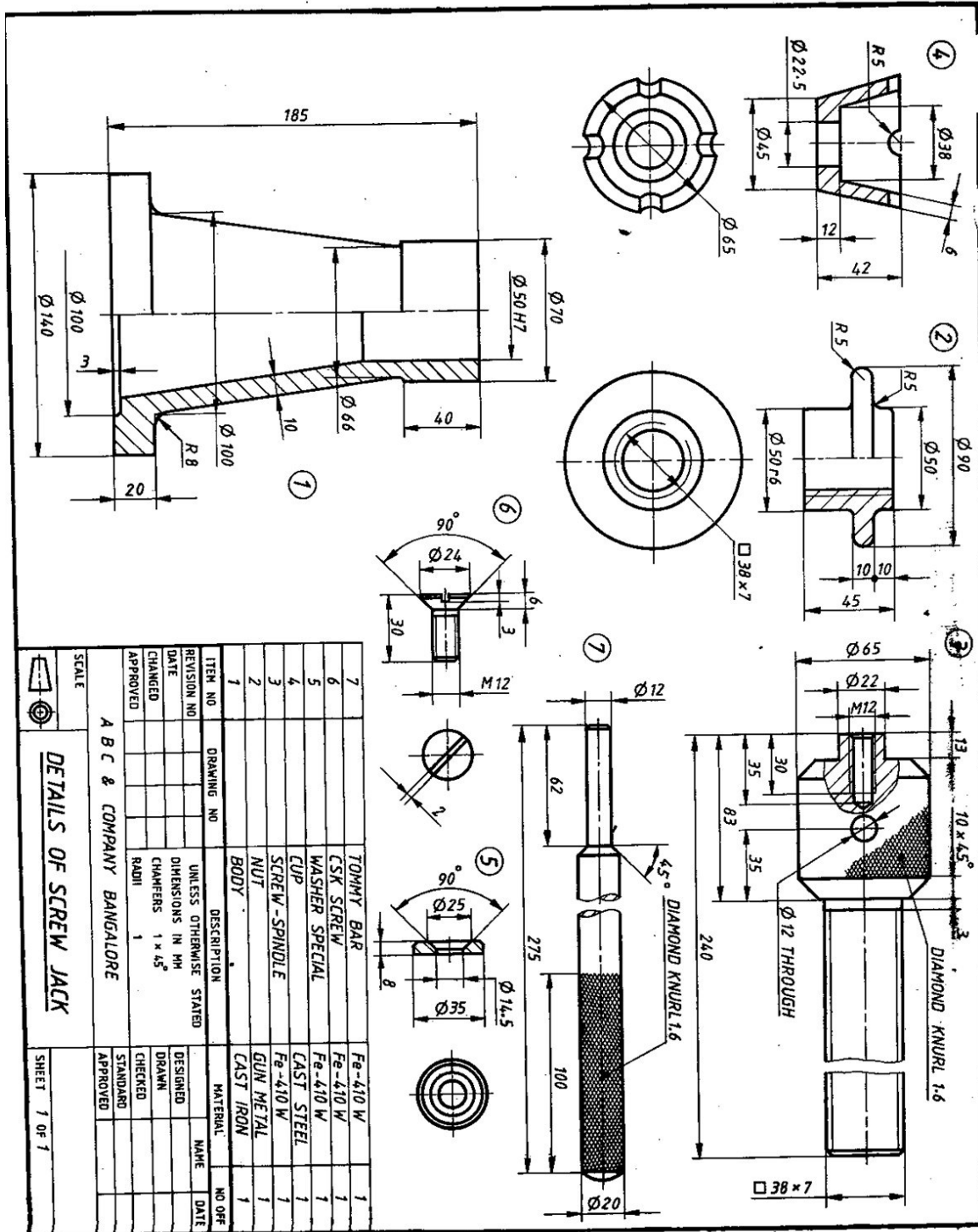
1. ASSEMBLY OF SCREW JACK

The details of a SCREW JACK are shown in Fig. Assemble the parts of the jack and draw the following views of the assembly when the top face of the load bearing cup is raised to a height of 350 mm above the bearing surface of the body.

1. Front view in half section.
2. Top view.

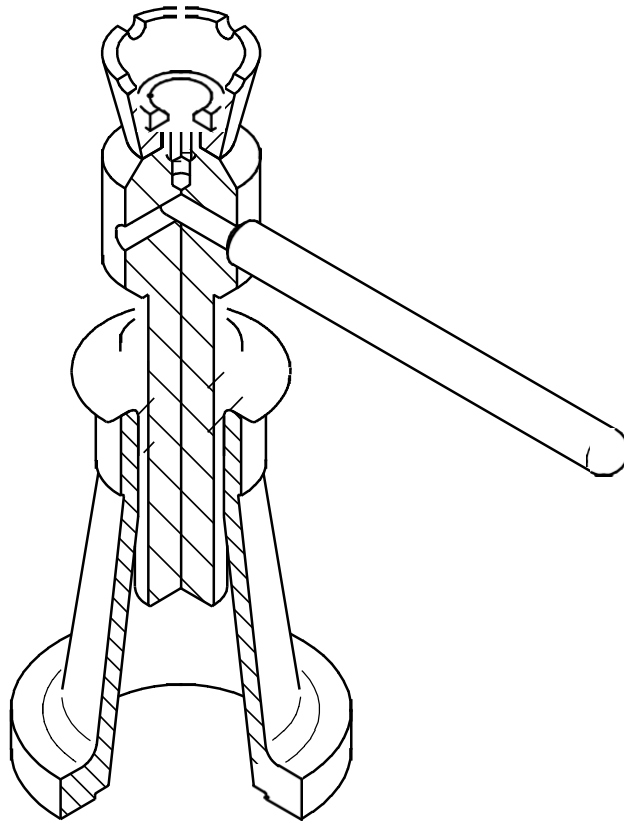
Show only the important dimensions on the assembly drawing. Write the title SCREWJACK. Add the item list.





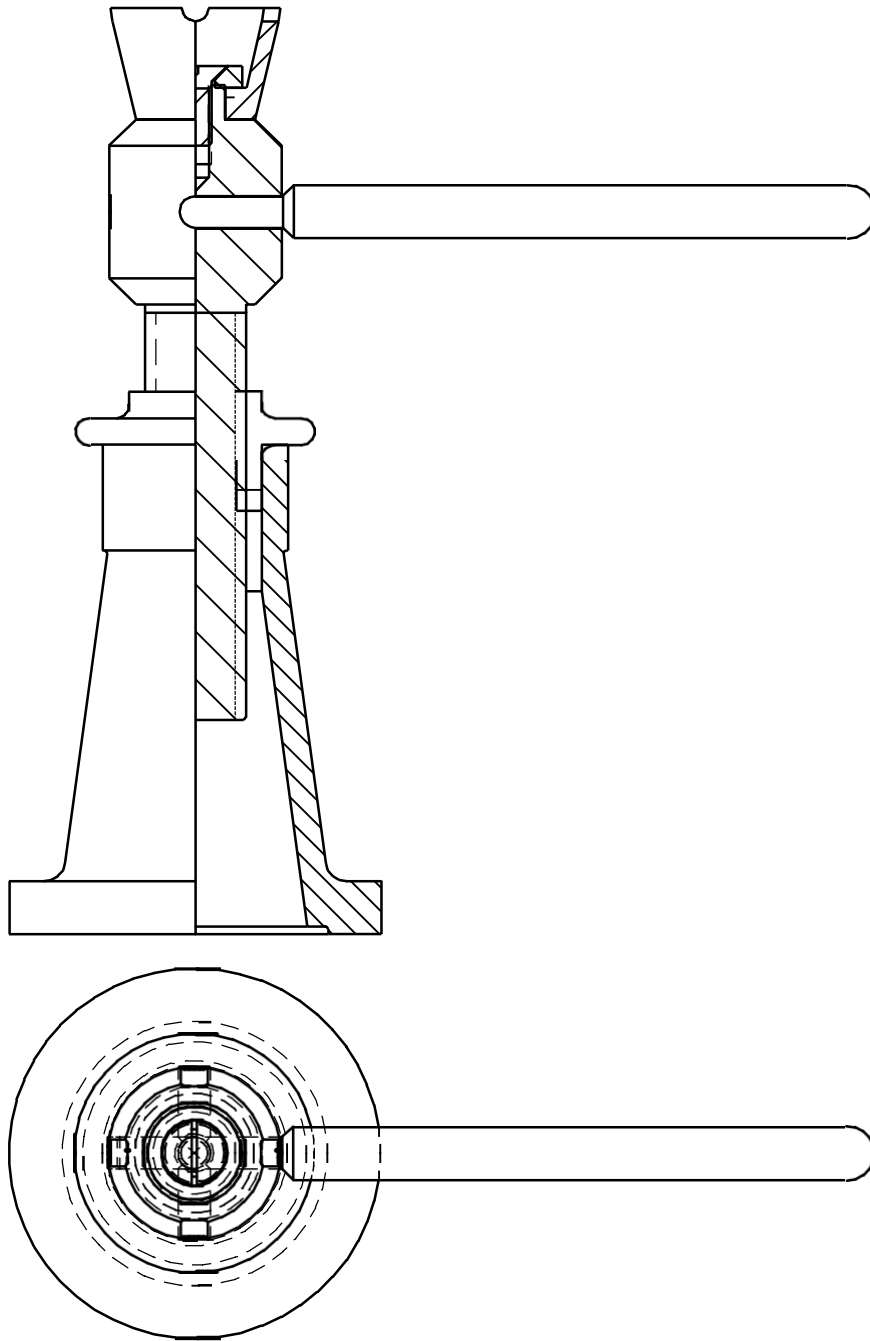
Details of a SCREW JACK

Create the following views in separate sheet along with part list.



3D ISOMETRIC VIEW

Item Number	Document Number	Title	Material	Quantity
1*	01	Body	CAST IRON	1
2*	02	Nut	GUN METAL	1
3*	03	Spindle	Fe410W	1
4*	04	Cup	CAST STEEL	1
5*	05	washer special	FE-410W	1
6*	06	CSK Screw	Fe-410W	1
7*	07	TOMMY BAR	Fe-410w	1



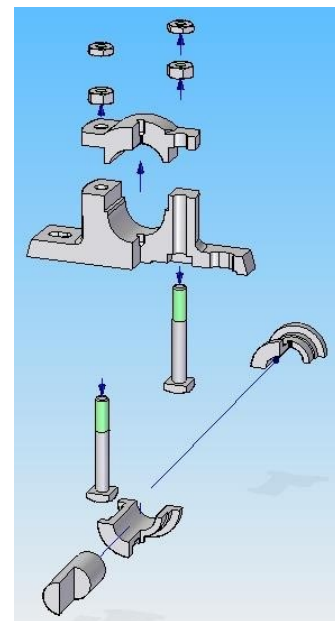
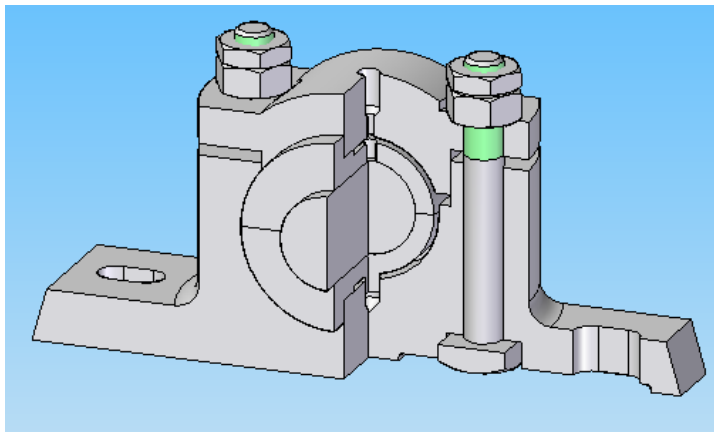
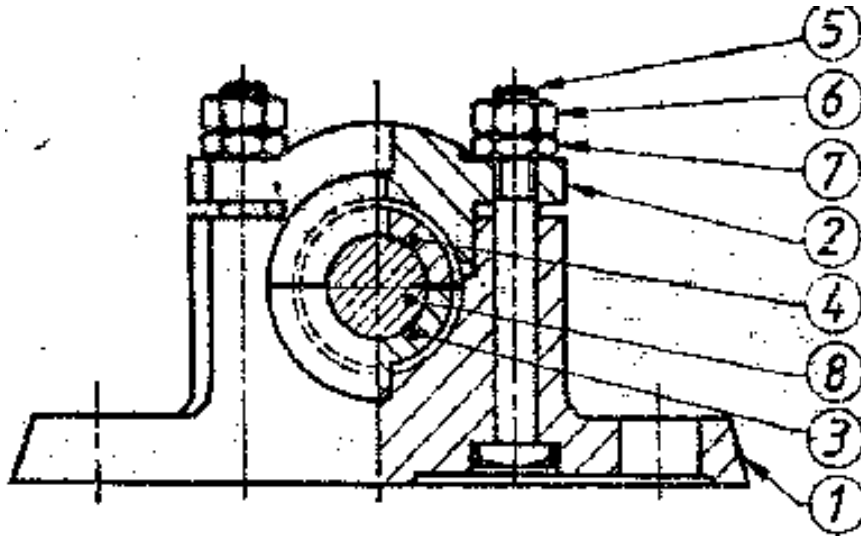
Front and Top View of Screw Jack

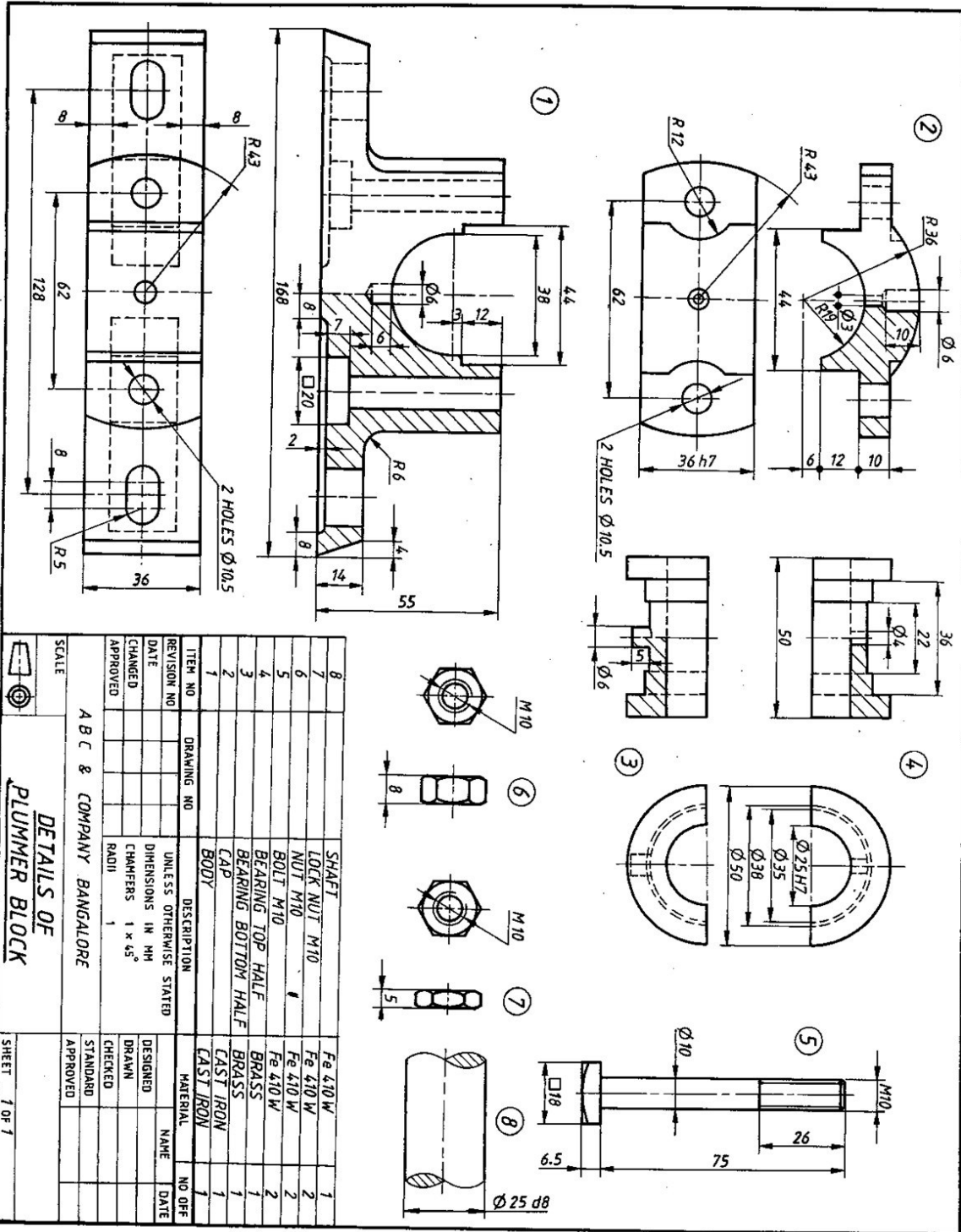
2. ASSEMBLY OF PLUMMER BLOCK

Views of the parts of a PLUMMER BLOCK are shown in Fig. Draw to 1:1 scale, the following views of the bearing.

1. Front view showing right half in section.
2. Top view
3. Left side view.

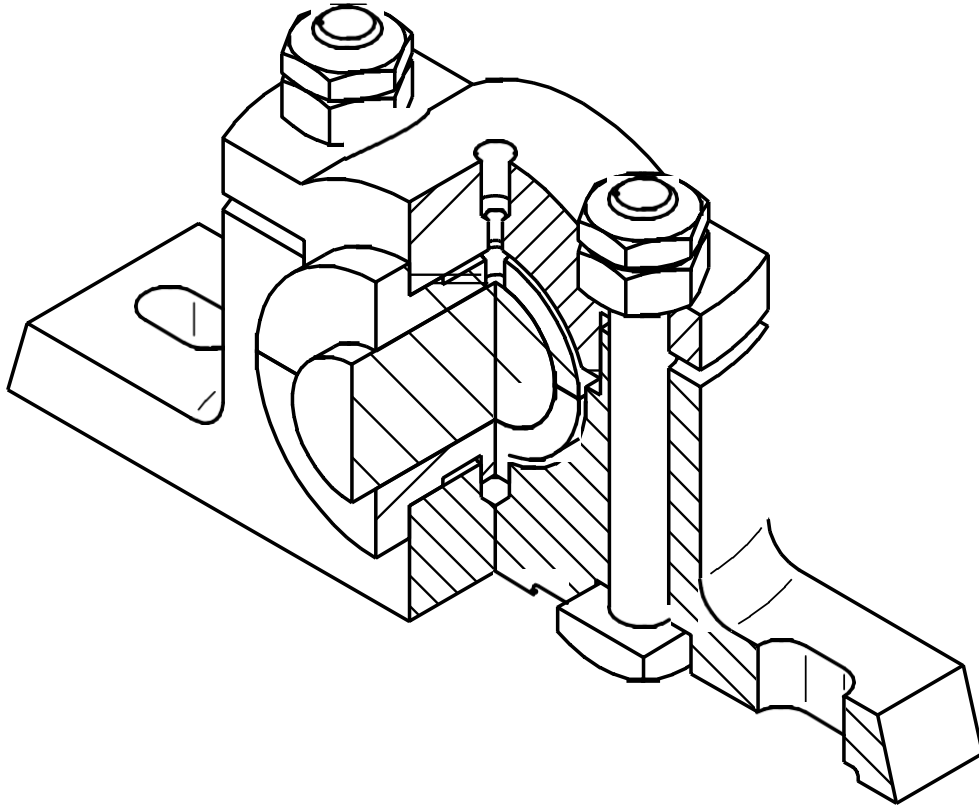
Indicate on the assembly important overall dimensions. Write the title-PLUMMER BLOCK and the scale. Add the item list.





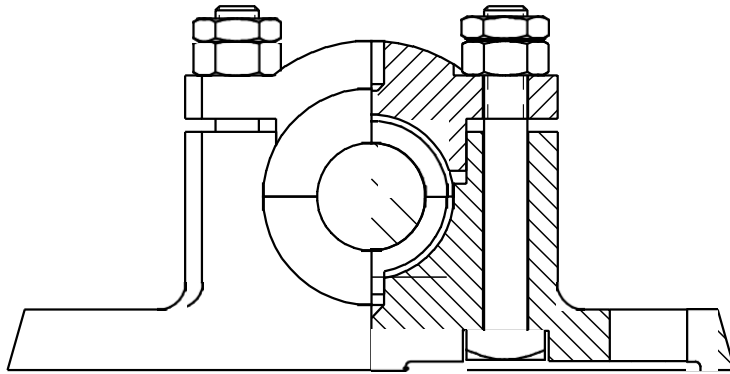
Details of PLUMMER BLOCK

Create the following views in separate sheet along with part list.

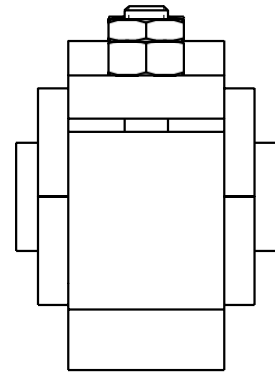


3D ISOMETRIC VIEW

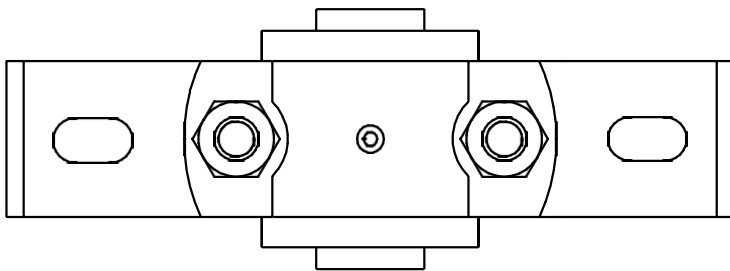
Item Number	Document Number	Title	Material	Quantity
1	01	Body	Cast Iron	1
2	03	Bearing Bottom Half	Brass	1
3	04	Bearing top Half	Brass	1
4	02	Cap	Cast iron	1
5	05	Bolt M10		2
6	06	Nut M10	Fe-410w	2
7	07	Lock Nut M10	Fe-410w	2
8	08	Shaft	Fe-410w	1



Front view in half section



Left side view



Top View

3. ASSEMBLY OF MACHICE VICE

Exercise 1:

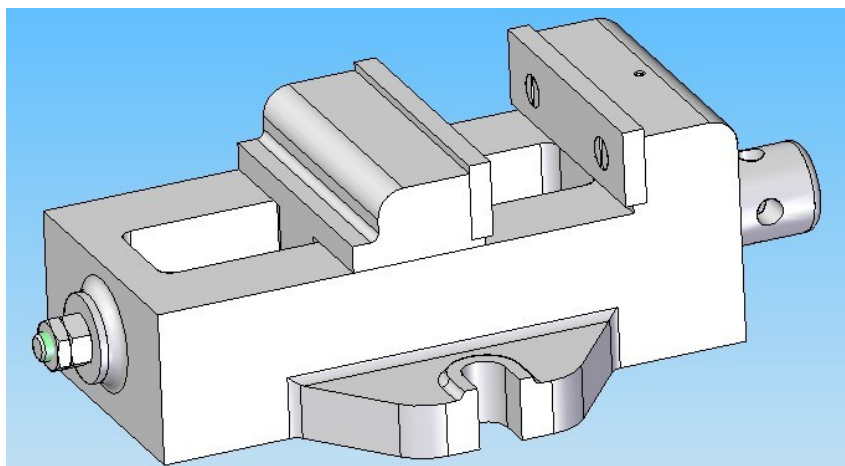
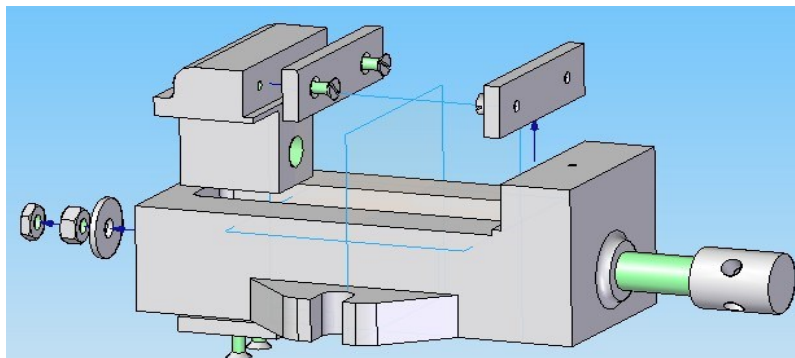
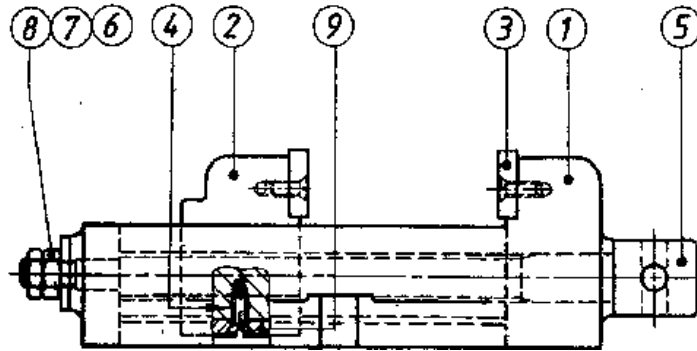
The details of a MACHICE VICE are shown in Fig. Draw the following views of the assembled vice to 1:1 scale with the jaws spread 50 mm apart.

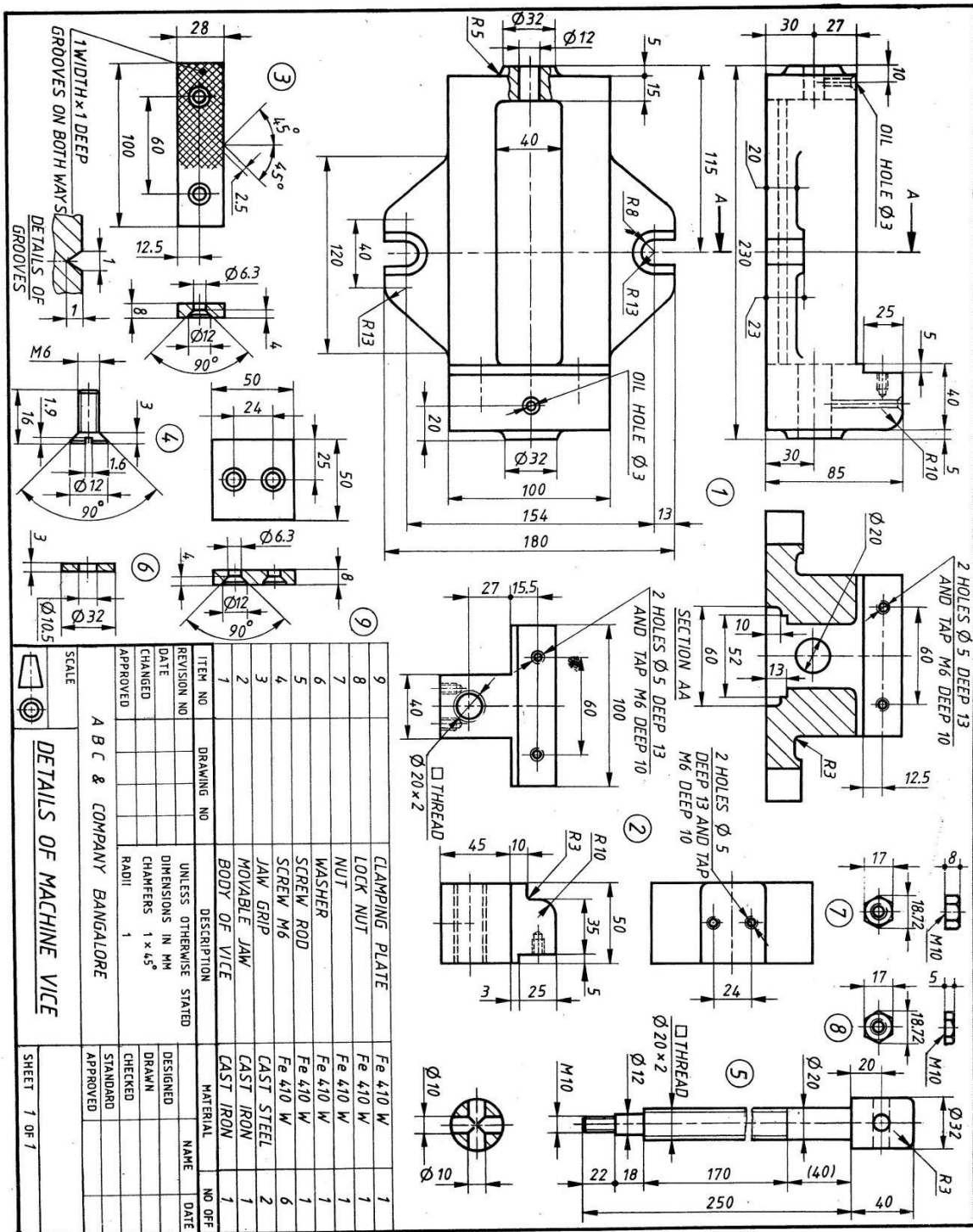
1. Front view
2. Top view
3. Left view showing the movable jaw in half section.

Exercise 2:

The details of a MACHICE VICE are shown in Fig. Draw the following views of the assembled vice to 1:1 scale with the jaws spread to hold the work-piece of maximum size.

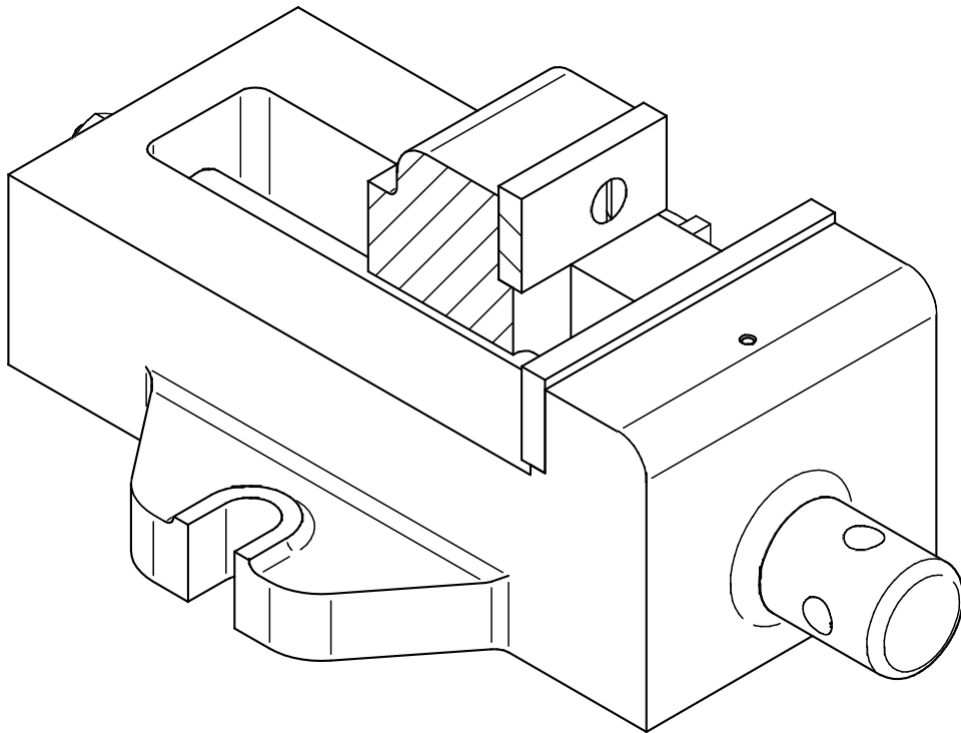
1. Half sectional front view showing fixed jaw in section.
2. Top view.
3. Left view.



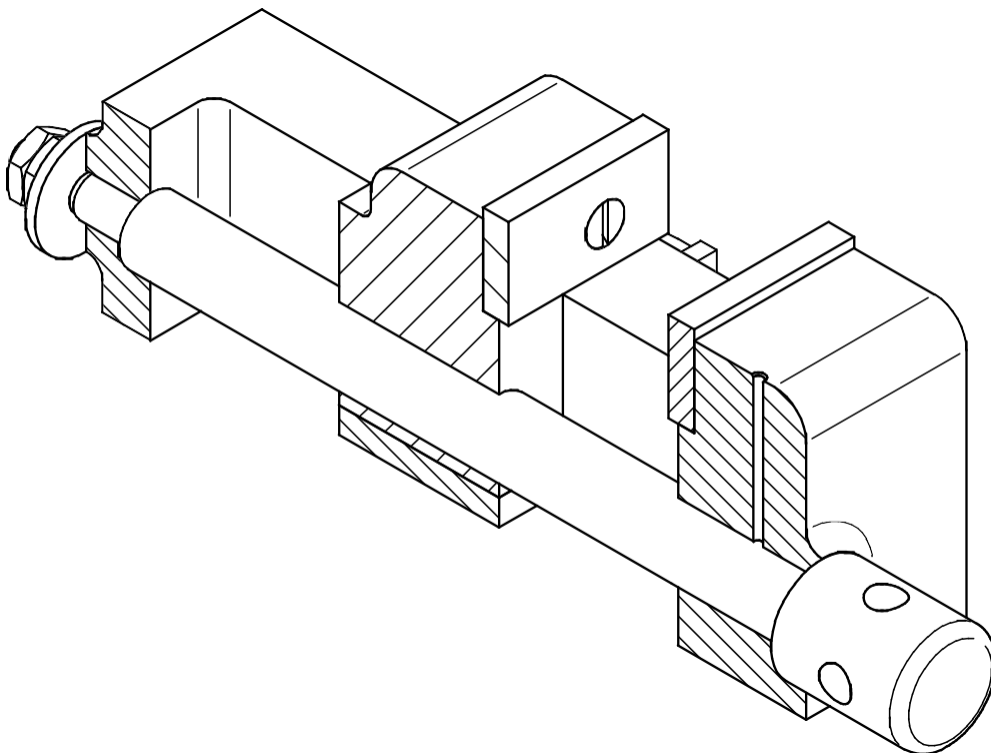


Details of MACHICE VICE

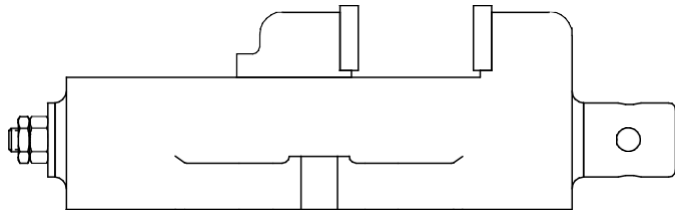
Create the following views in separate sheet along with part list.



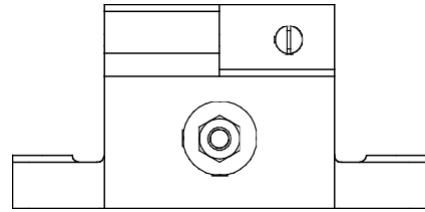
3D Isometric View with movable jaw in section



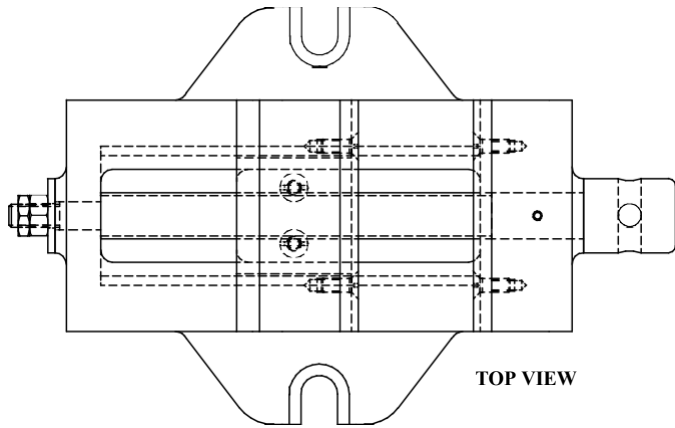
Isometric View In Full Section



FRONT VIEW



LEFT SIDE VIEW WITH
MOVABLE JAW IN SECTION



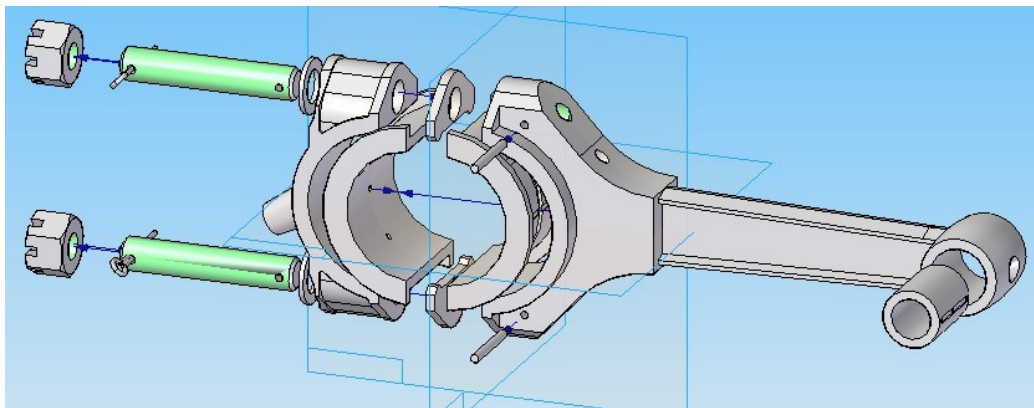
TOP VIEW

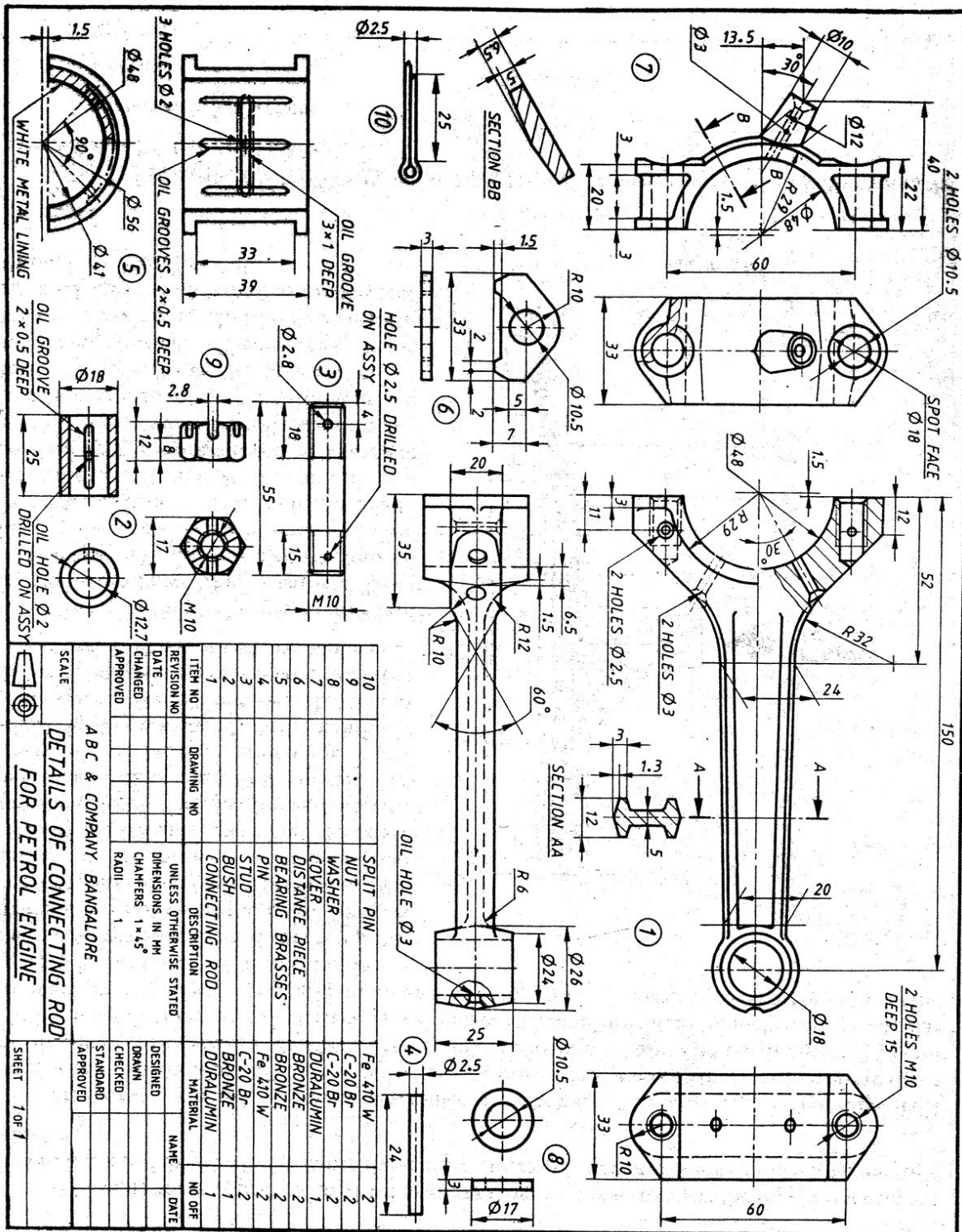
Item Number	Document Number	Title	Material	Quantity
1*	01	Body of Vice	CAST IRON	1
2*	02	Movable Jaw	Cast Iron	1
3*	03	Jaw Grip	cast steel	2
4*	06	Screw Rod	Fe-410W	1
5*	07	Nut	Fe-410w	1
6*	06	Washer	Fe-410W	1
7*	08	Lock Nut	Fe-410w	1
8*	09	Clamping Plate	Fe-410W	1
9*	04	Screw M 6	Fe-410W	6

4. ASSEMBLY OF PETROL ENGINE CONNECTING ROD

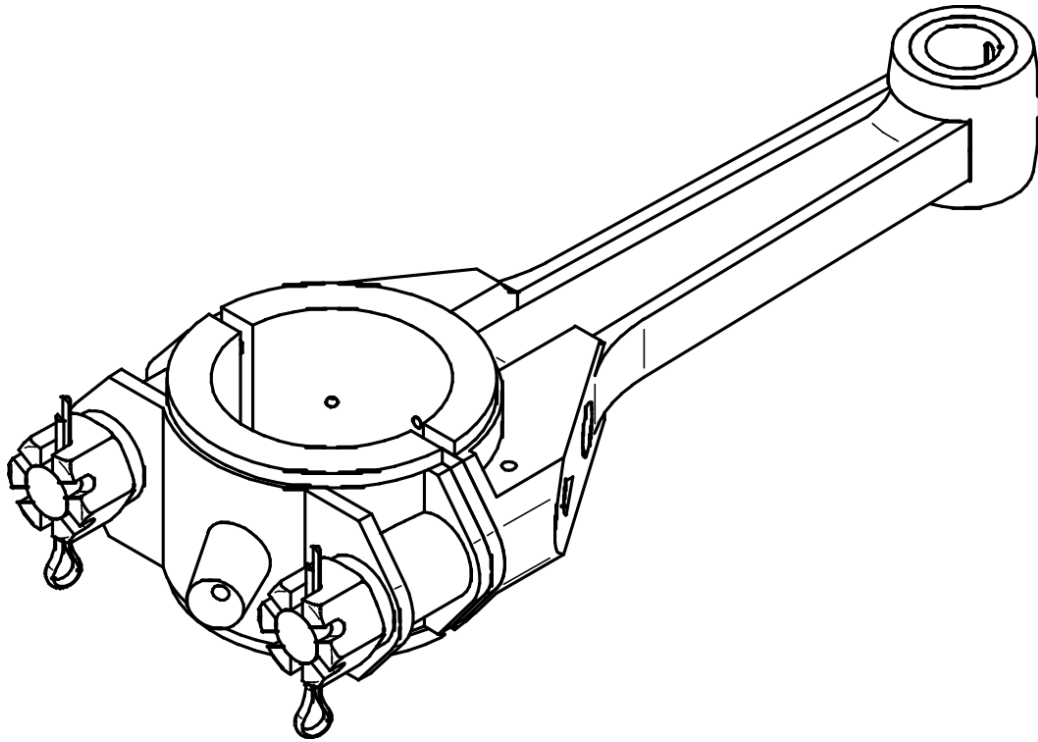
Fig. shows the details of a PETROL ENGINE CONNECTING ROD. Draw the following assembled views of the connecting rod with its axis horizontal to 2:1 scale.

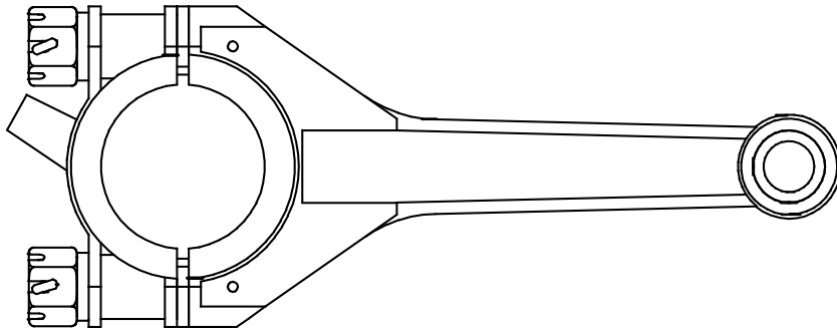
1. Front view with top half in section.
2. Top view with front half in section.
3. Side view with bottom half in section looking from the big end.



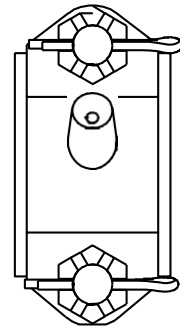


Details of PETROL ENGINE CONNECTING ROD

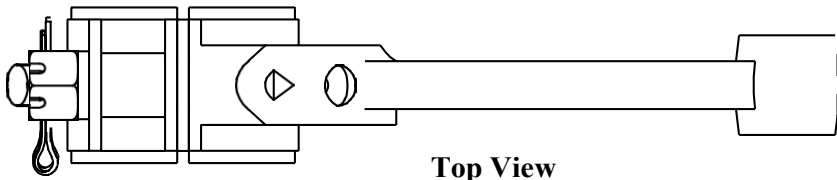




Front View



Left side View



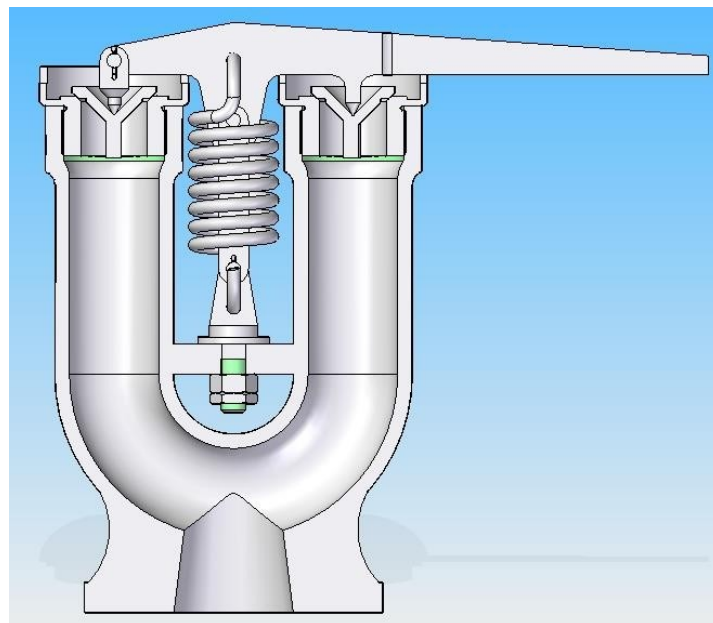
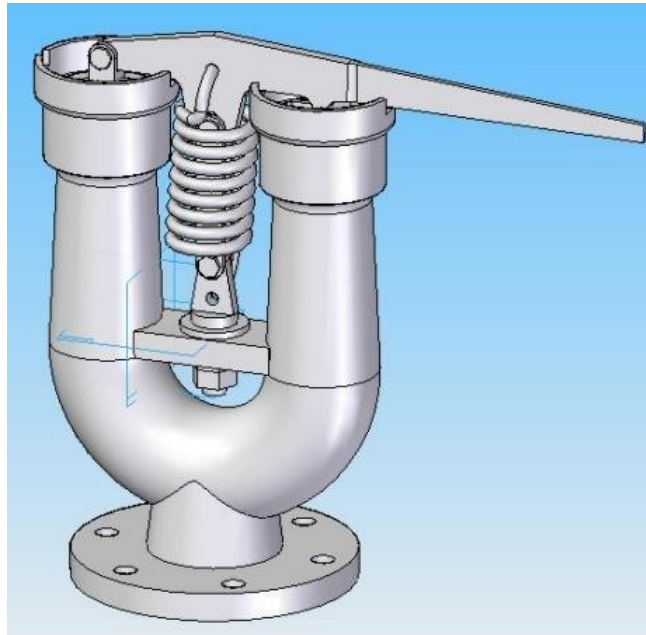
Top View

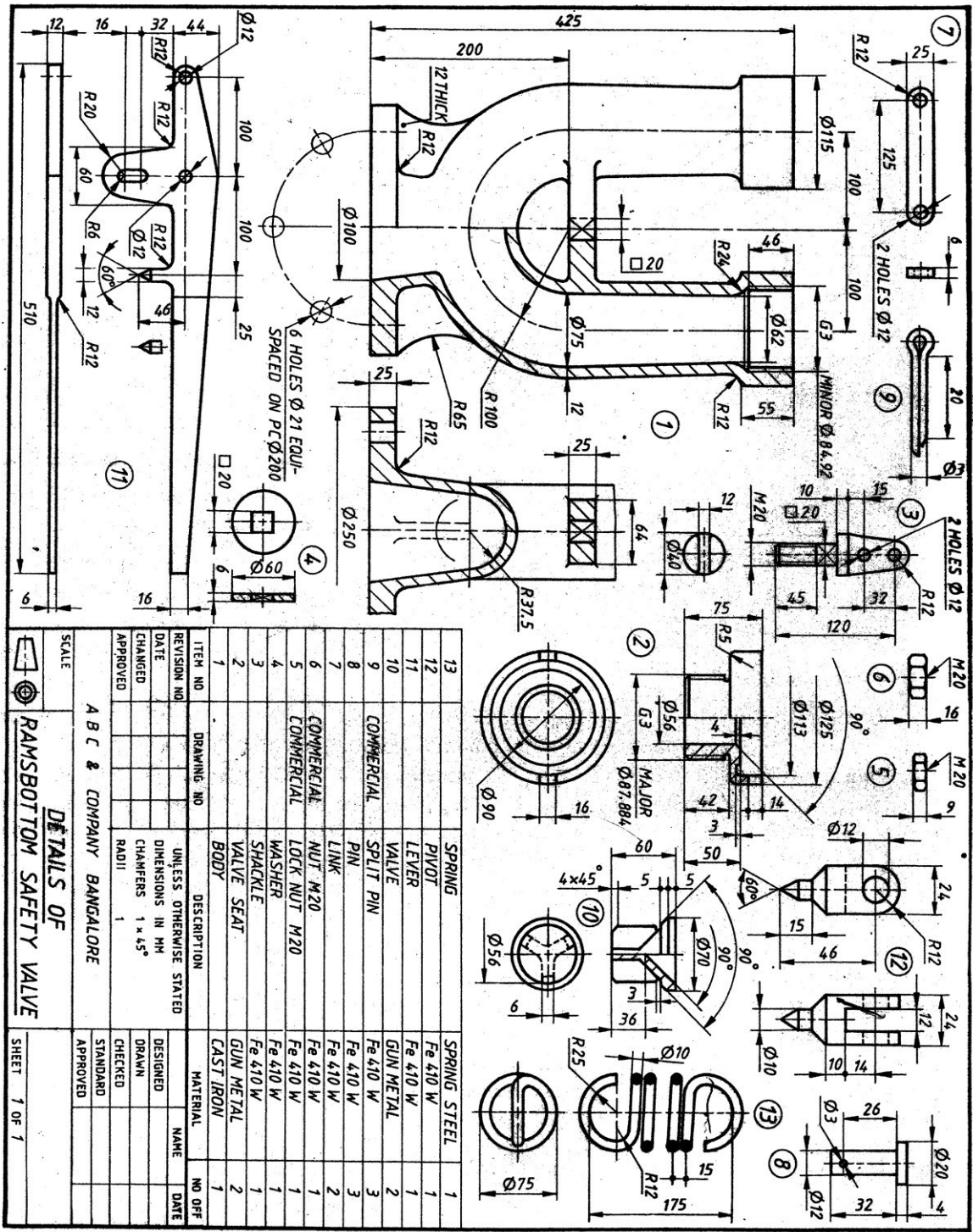
5. ASSEMBLY OF RAMSBOTTOM SAFETY VALVE

The parts of a RAMSBOTTOM SAFETY VALVE are shown in Fig. Draw to 1:2 scale, the following views.

1. Front view in section.
2. Top view.
3. Left side view in section.

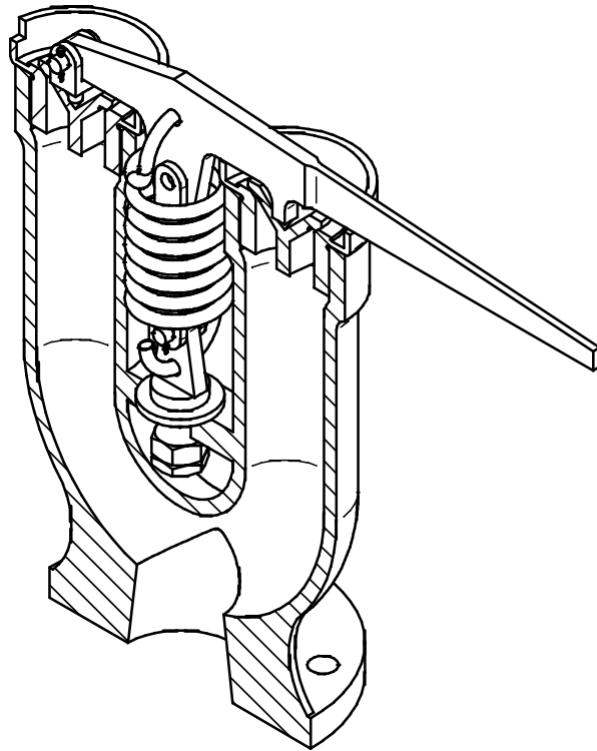
Show major dimensions and print the title —RAMSBOTTOM SAFETY VALVE and the scale. Also add the item list.





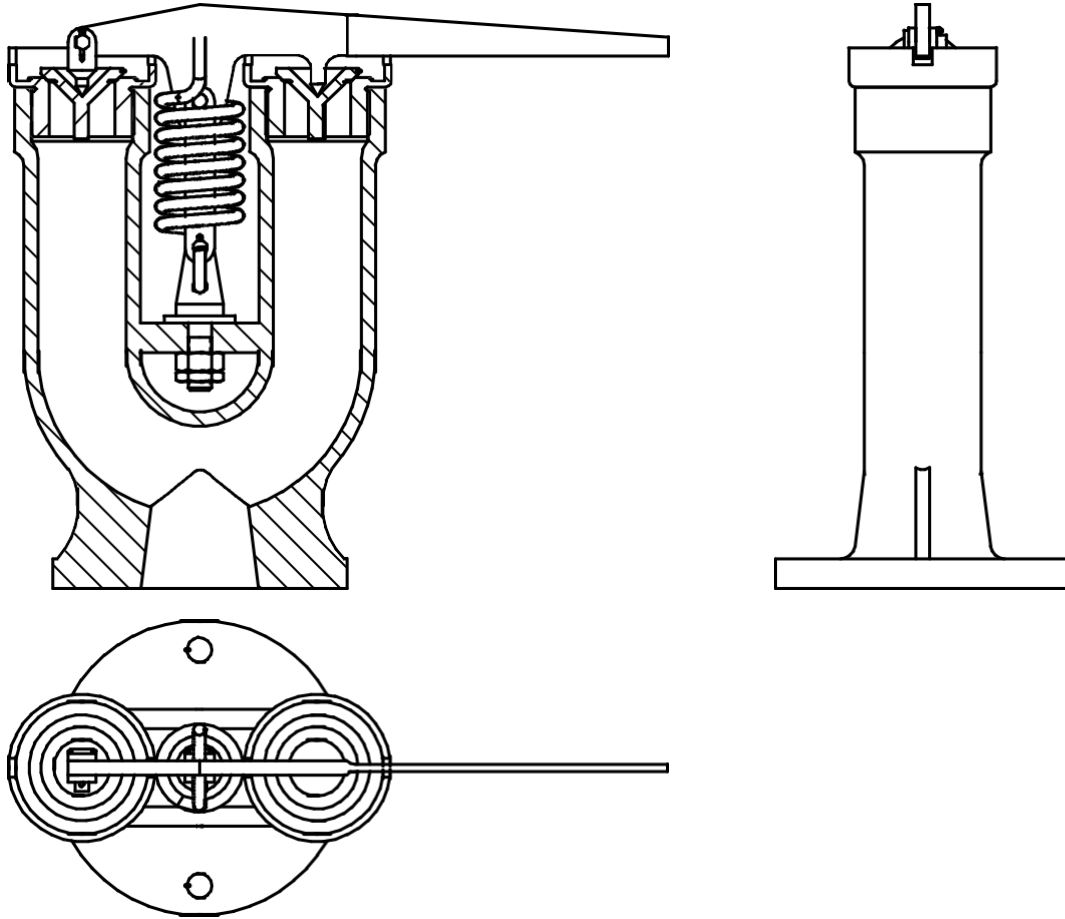
Details of RAMSBOTTOM SAFETY VALVE

Create the following views in separate sheet along with part list.



3D ISO view

Item Number	Document Number	Title	Material	Quantity
1*	01	Body	CAST IRON	1
2*	02	Valve seat	GUN METAL	2
3*	10	valve	FE410W	2
4*	12	PIVOT	FE410W	1
5*	11	LEVER	FE-410W	1
6*	08	PIN	FE-410W	3
7*	03	SHACKLE	Fe-410W	1
8*	06	Nut M20	Fe-410W	1
9*	05	Lock Nut M20	Fe-410W	1
10*	07	LINK	FE-410w	2
11*	04	Washer	Fe-410W	1
12*	9	SPLIT PIN	FE410W	3
13*	13	Spring	Fe-410W	1

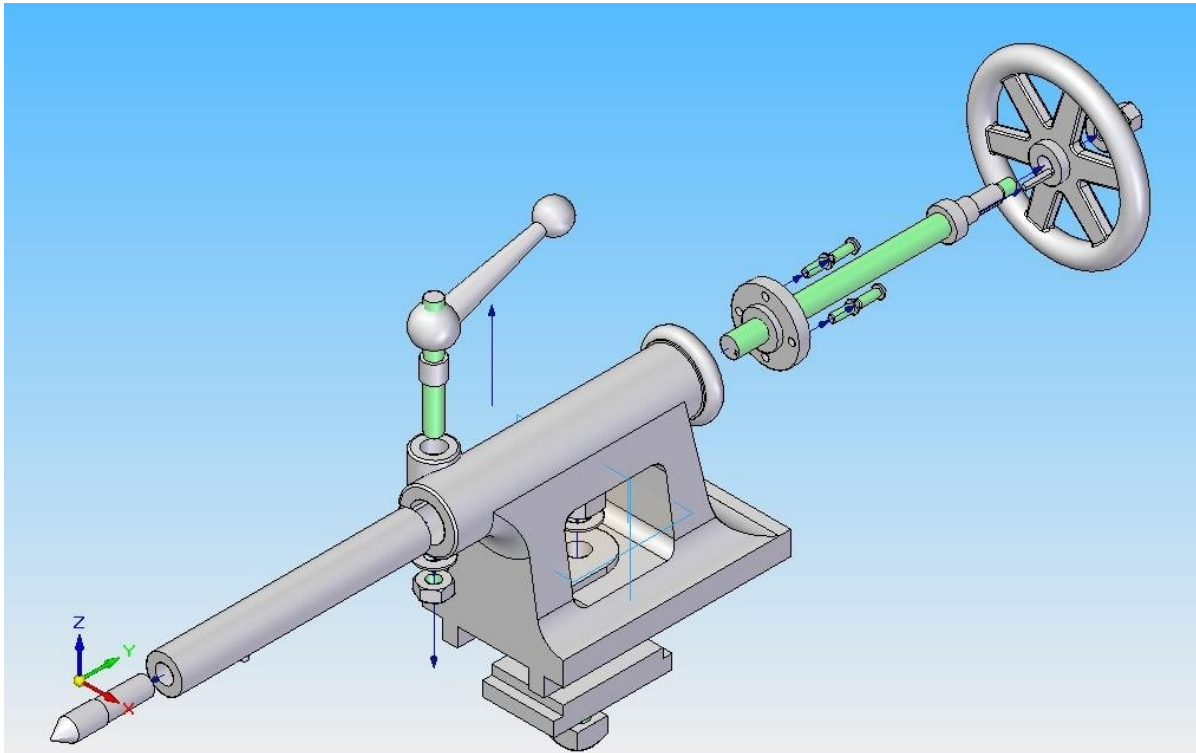


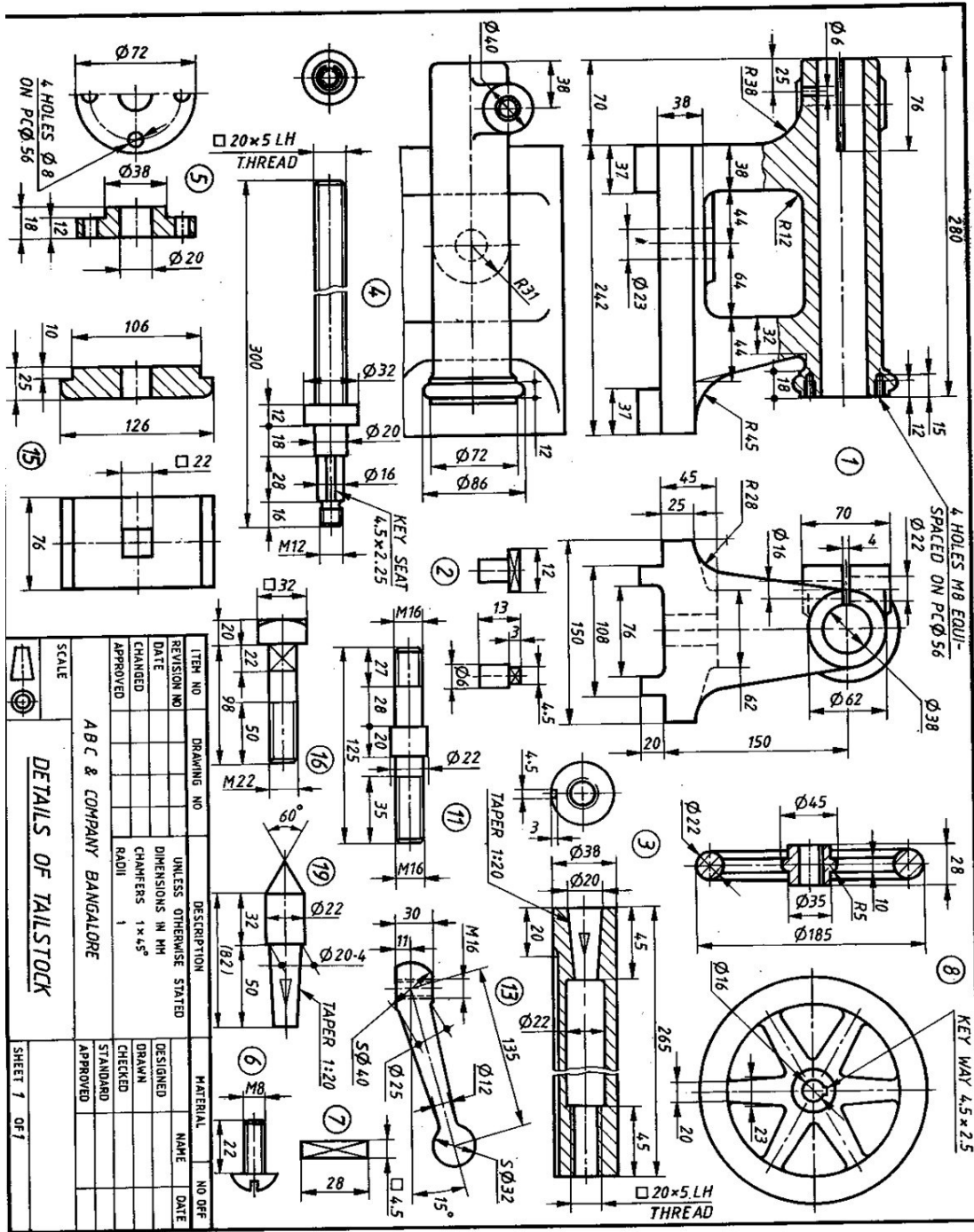
Front, Top and Side of Safety Valve

5. ASSEMBLY OF TAIL STOCK OF A LATHE

Figure shows the details of a tail stock of a lathe. Assemble the parts and draw

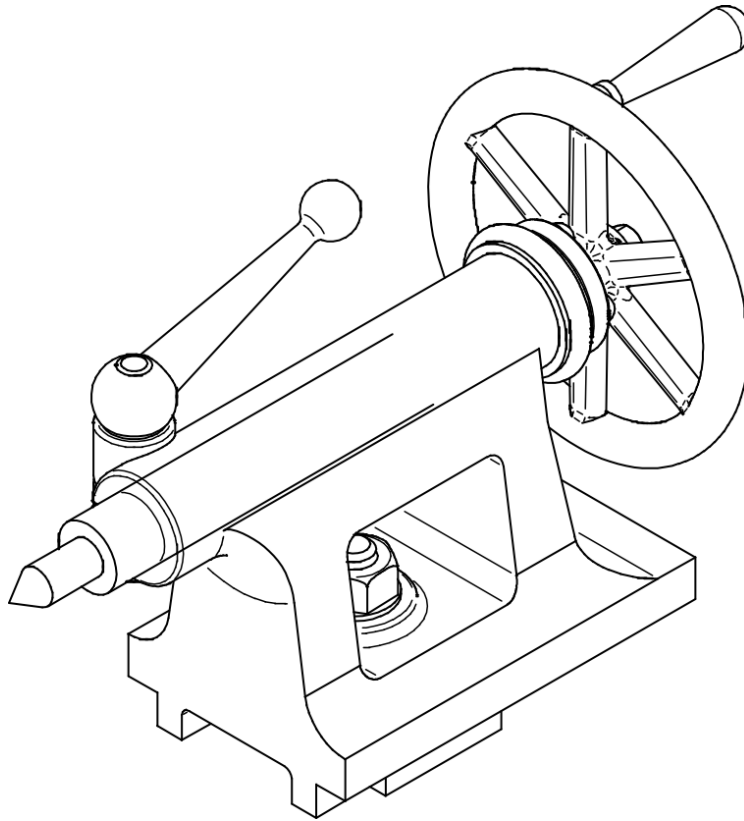
- i) Front view
- ii) Top view
- iii) Side view looking from hand wheel.

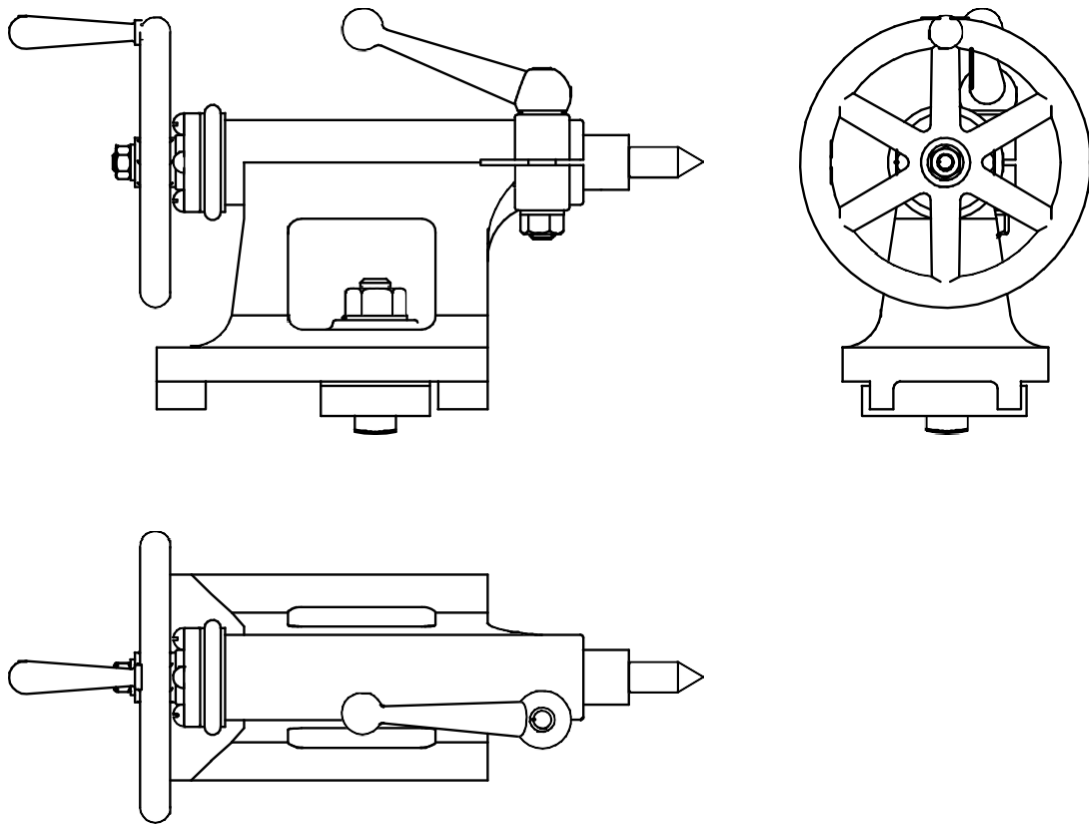




Details of a tail stock of a lathe

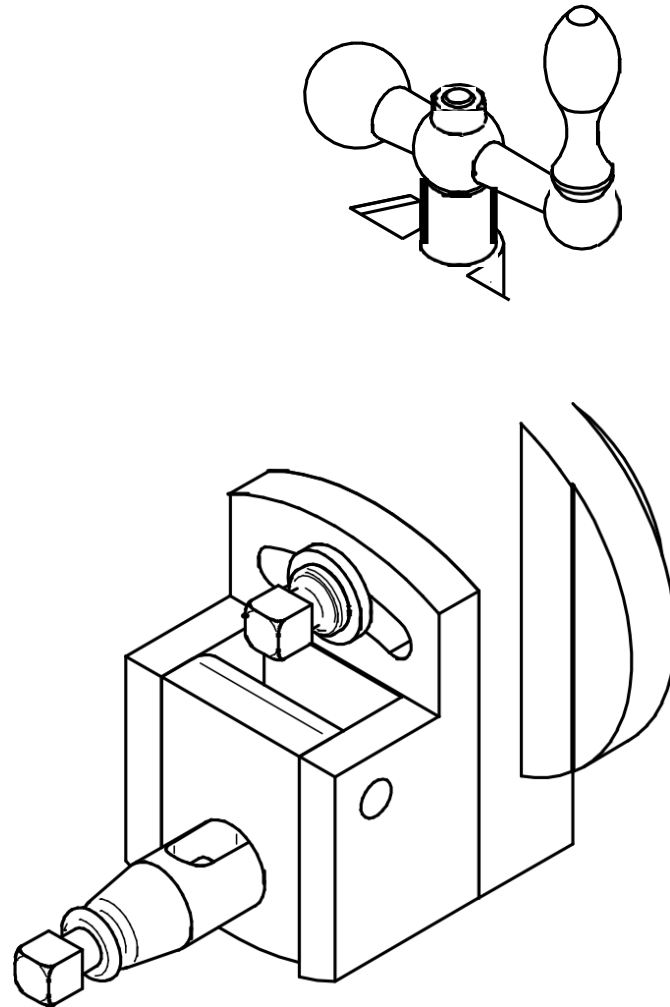
Create the following views in separate sheet along with part list.

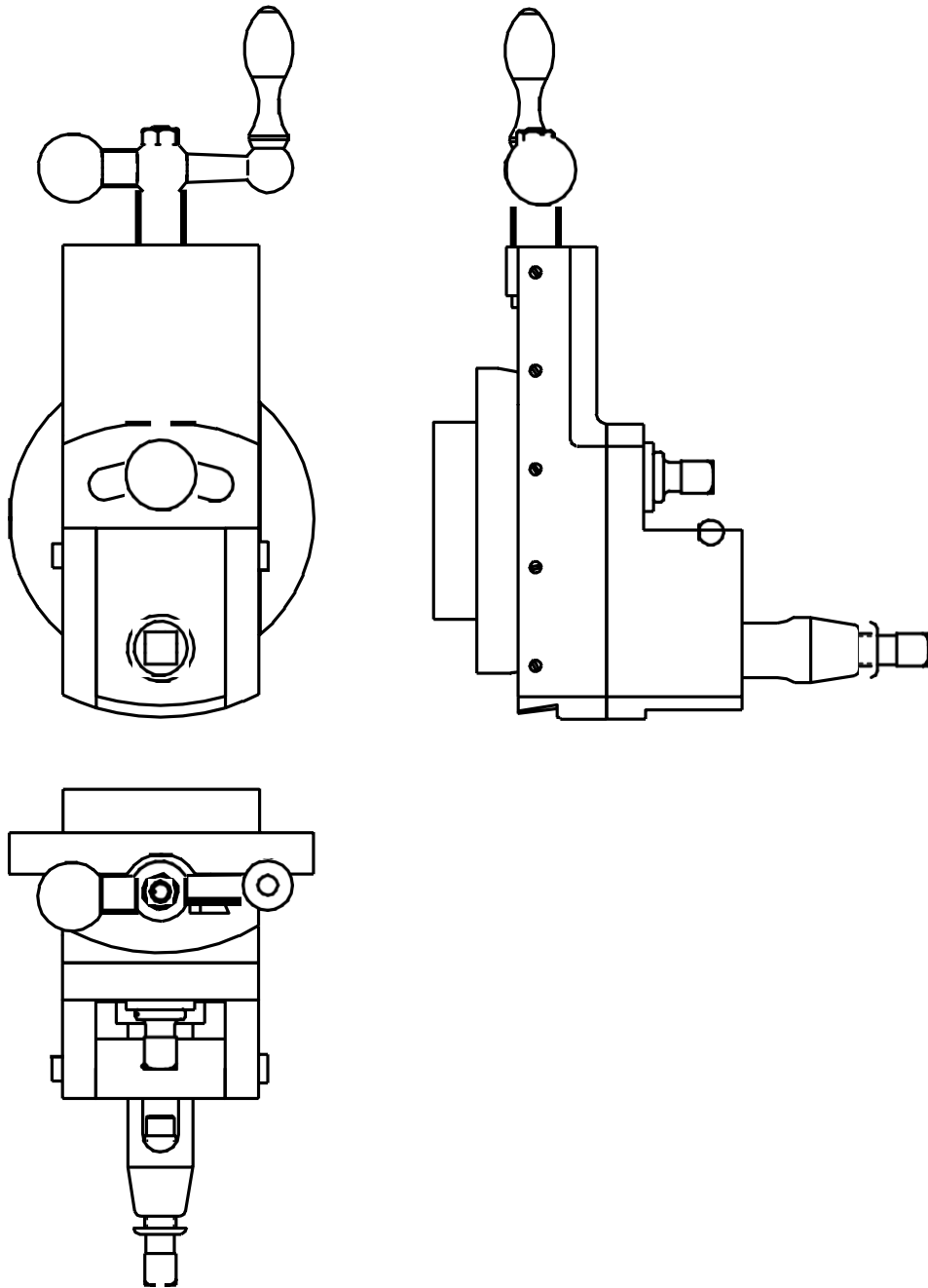




Front, Top and Left side view of Tail stock

TOOL HEAD OF A SHAPER





Adichunchanagiri University
Third Semester B.E. Degree (CBCS) Examination
 (MECHANICAL ENGINEERING)

COMPUTER AIDED MACHINE DRAWING (18ME36A/46B)

Time: 3 Hours **Max. Marks: 100**

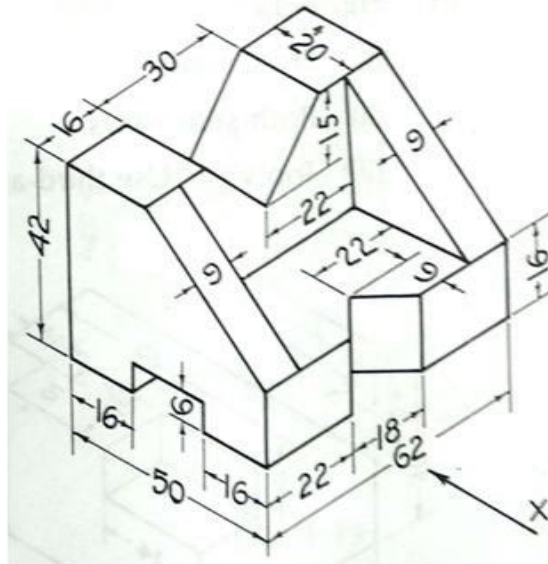
Note: 1. Answer any ONE question from each of the parts A, B and C.

2. Use **FIRST ANGLE** projection only.
3. Missing data if any may suitably be assumed.
4. All the dimensions are in mm.

5. Part C Assembled View should be in 3D and other 2 views in 2D.

PART A

1. The pictorial view of a Machine Part is shown below, Draw the following views
 i) Front View, ii) Top View & iii) Side View



20 Marks

2. Draw the following profiles.

- a. ACME thread of pitch 45mm
- b. External and internal BSW thread of pitch 50mm

20Marks

PART B

3. Draw sectional front view and top views of the double riveted Zig-Zag lap joint, taking $t=10\text{mm}$. Indicate dimensions.

20 Marks

4. Sketch protected type Flange Coupling to connect two shafts as per the instruction given below.
 (i) Half Sectional Front View (ii) Right Side View Diameter of the shaft: 25mm

20 Marks

PART C

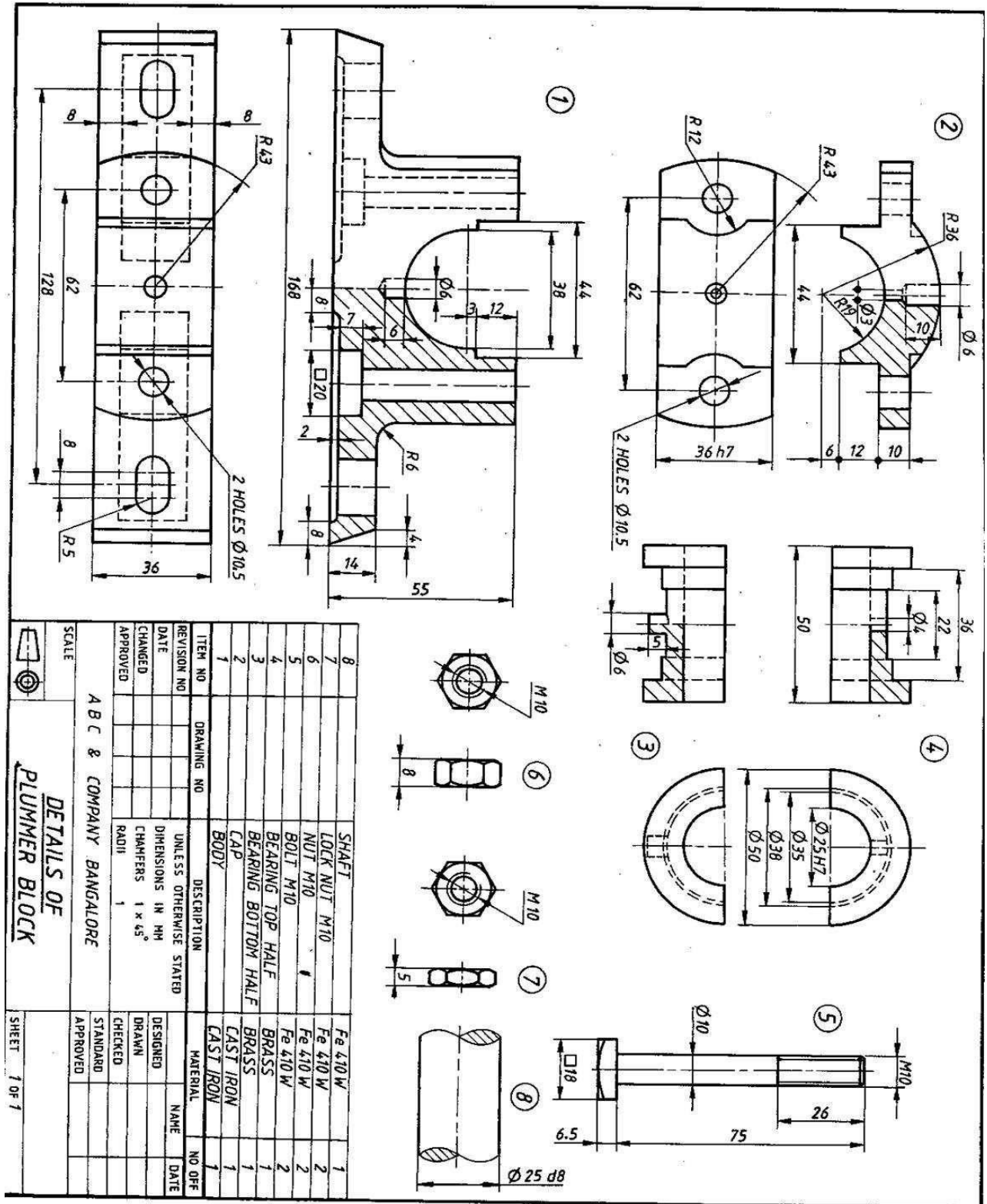
5. Details of 'PLUMMER BLOCK' are shown in following Figure 1. Assemble the parts and draw the following views of the assembly.

- i. Sectional Front View

ii Top View **60 Marks**

6. Figure 2 shows the details of 'SCREW JACK. Assemble the parts and draw the following views of the assembly.

- i. Sectional Front view
- ii. Top view **60 Marks**



ITEM NO	DRAWING NO	DESCRIPTION	MATERIAL	NO OFE
1		SHAFT	Fe 410W	1
2		LOCK NUT M10	Fe 410W	2
3		NUT M10	Fe 410W	2
4		BOLT M10	Fe 410W	2
5		BEARING TOP HALF	BRASS	1
6		BEARING BOTTON HALF	BRASS	1
7		CAP	CAST IRON	1
8		BODY	CAST IRON	1

REVISION NO	DATE	UNLESS OTHERWISE STATED	DESIGNED	NAME	DATE
1		DIMENSIONS IN MM			
2		CHAMFERS 1 x 45°			
3		RADII			

APPROVED	CHECKED	STANDARD	APPROVED

ABC & COMPANY BANGALORE

SCALE: 1 OF 1

DETAILS OF PLUMBER BLOCK

SHEET 1 OF 1

Figure 1 'PLUMMER BLOCK'

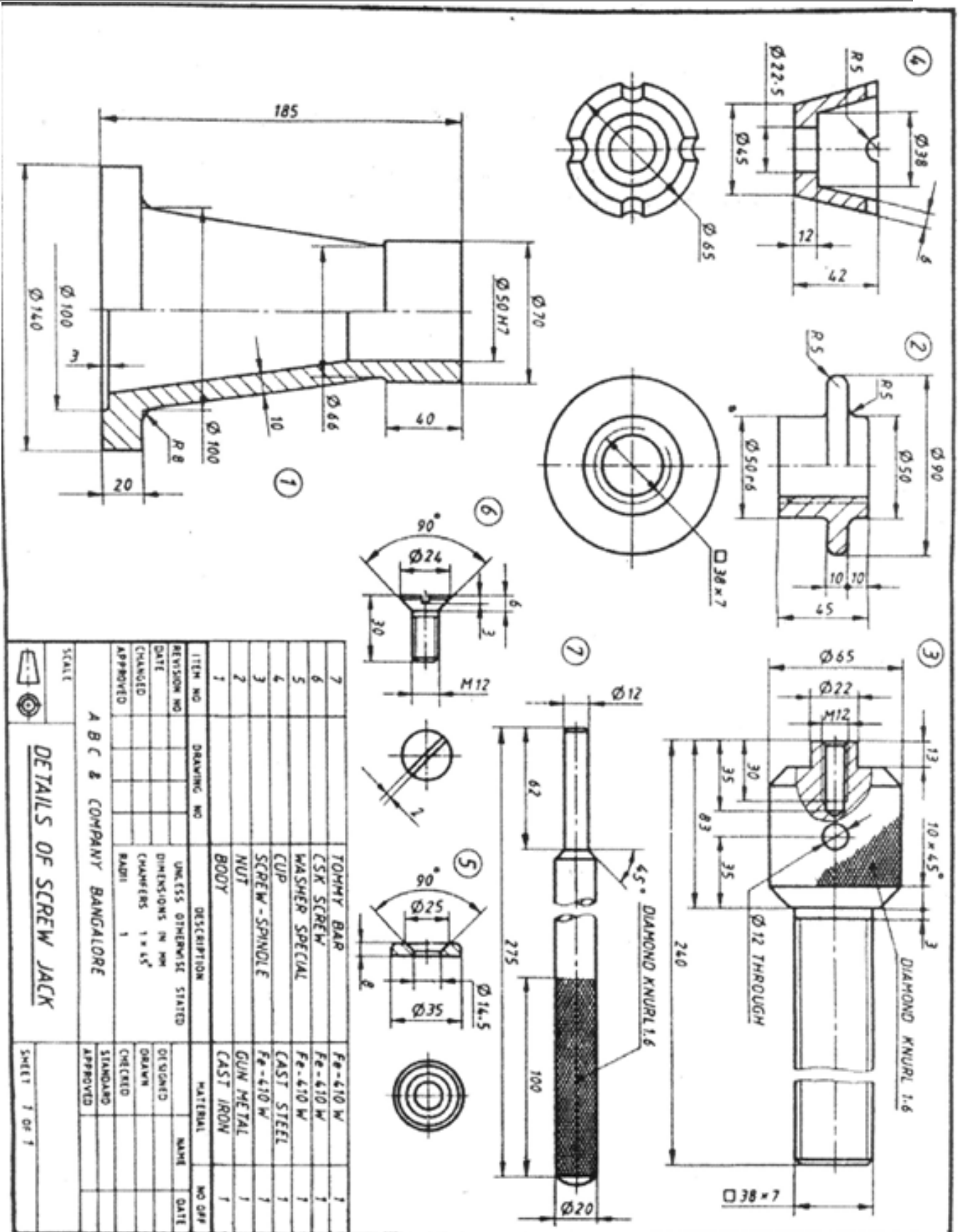


Figure 2: 'SCREW JACK'

Adichunchanagiri University
Third Semester B.E. Degree (CBCS) Examination
 (MECHANICAL ENGINEERING)
 COMPUTER AIDED MACHINE DRAWING (18ME36A/46B)

Time: 3 Hours

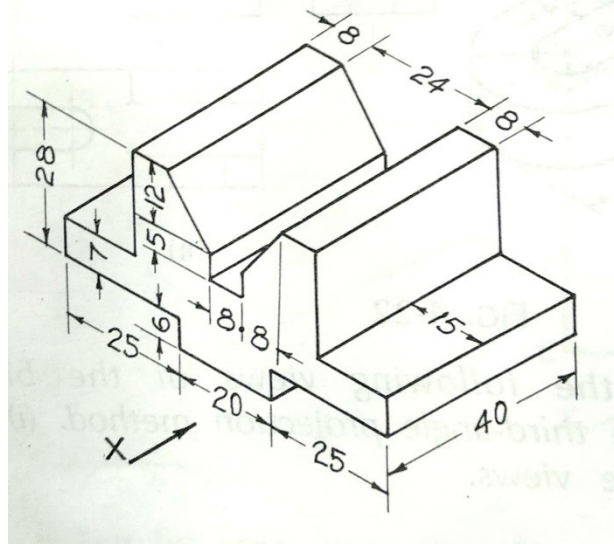
Max. Marks: 100

- Note:** 1. Answer any ONE question from each of the parts A, B and C.
 2. Use **FIRST ANGLE** projection only.
 3. Missing data if any may suitably be assumed.
 4. All the dimensions are in mm.

5. Part C Assembled View should be in 3D and other 2 views in 2D.

PART A

1. Using First Angle Projection, Draw the Orthographic Views of the object shown in fig below.



20Marks

2. Draw the following profiles of pitch 50mm.

- i. Square thread
 ii. ISO thread **20Marks**

PART B

3. Sketch sectional front and top views of double riveted Zig-Zag butt joint with double straps, taking $t=10\text{mm}$. Indicate dimensions. **20 Marks**
 4. Draw sectional Front View & Side View of a Protected Type Flange Coupling to connect two shafts of diameter 30mm. Indicate the dimensions. **20 Marks**

PART C

5. Figure 1 shows the details of 'TAIL STOCK'. Assemble the parts and draw the following views of the assembly.

- i. Sectional Front View
 ii. Top View **60 Marks**

6. Details of 'Screw Jack' are shown in following Figure 2. Assemble the parts and draw the following views of the assembly.

- i. Sectional Front view
- Top view **60 Marks**

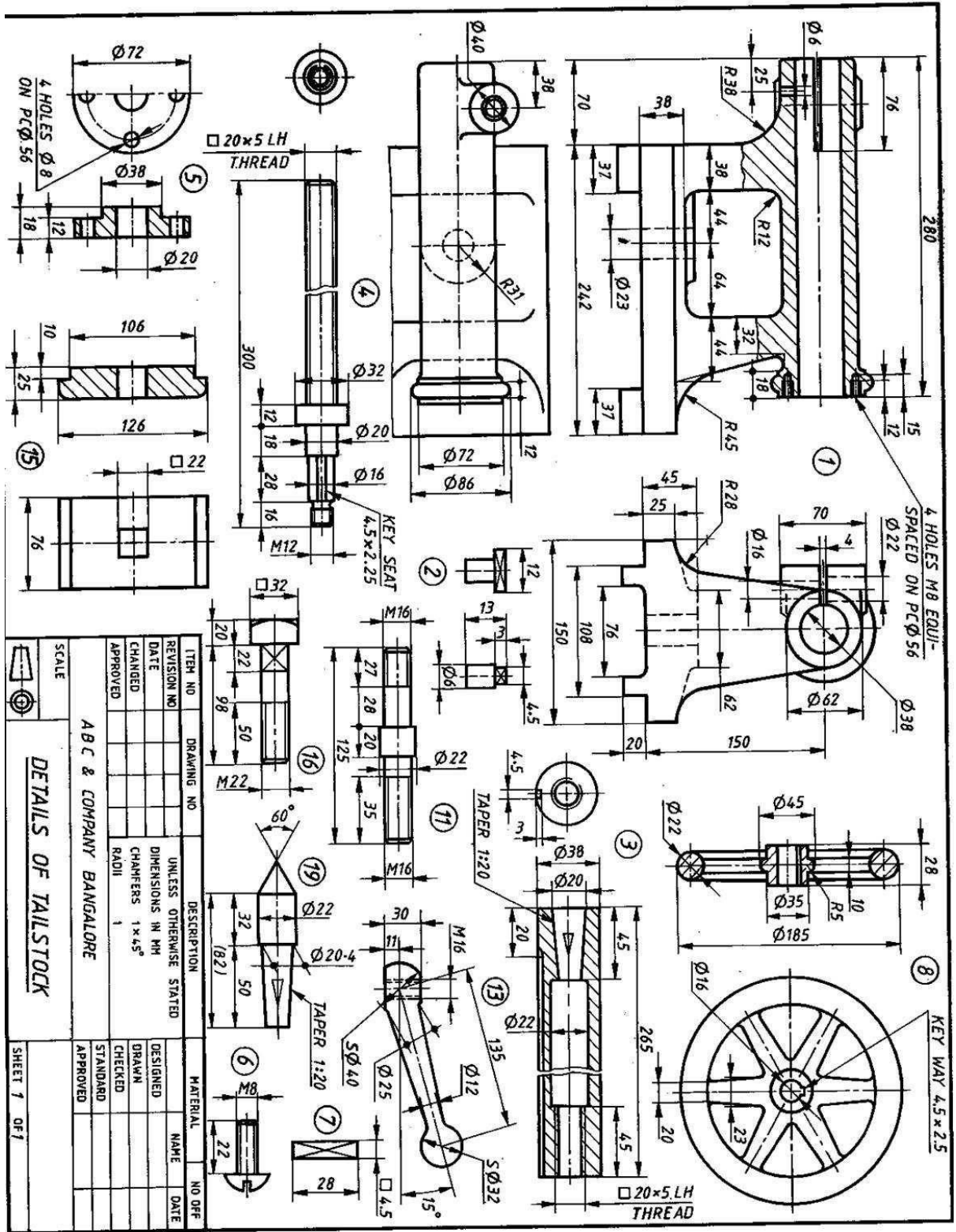


Figure 1 'TAIL STOCK'

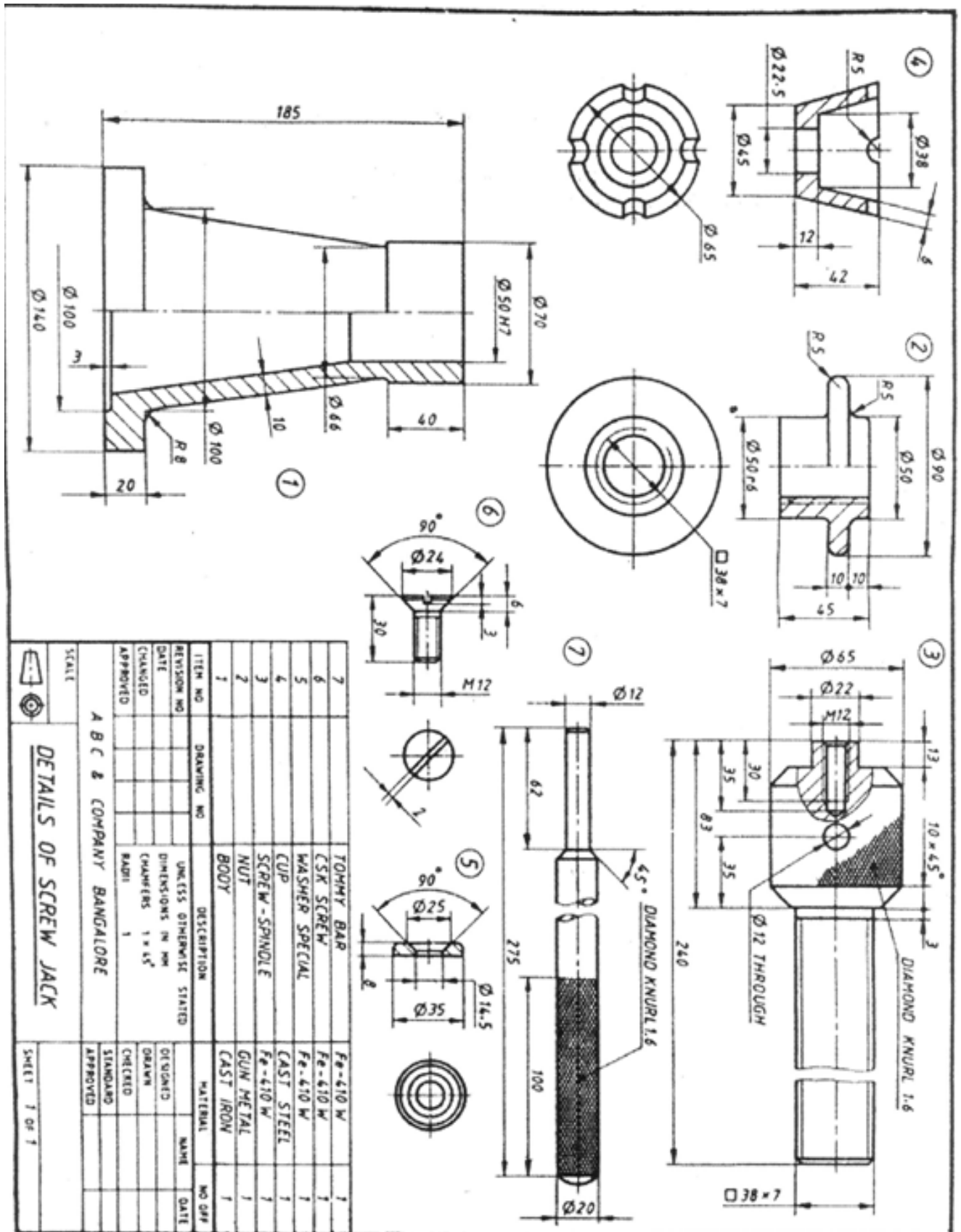


Figure 2 SCREW JACK

Adichunchanagiri University
Third Semester B.E. Degree (CBCS) Examination
 (MECHANICAL ENGINEERING)

COMPUTER AIDED MACHINE DRAWING (18ME36A/46B)

Time: 3 Hours

Max. Marks: 100

Note: 1. Answer any ONE question from each of the parts A, B and C.

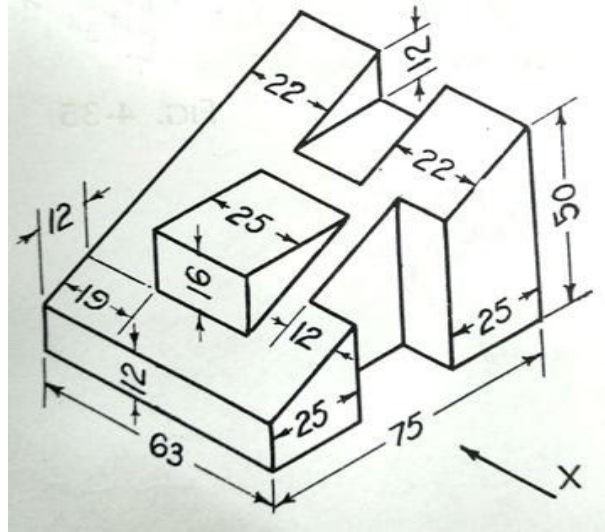
2. Use **FIRST ANGLE** projection only.
3. Missing data if any may suitably be assumed.
4. All the dimensions are in mm.

5. Part C Assembled View should be in 3D and other 2 views in 2D.

PART A

1. Following figure shows a component. Draw the following views.

- i) Front view ii) Top view iii) Side view from left



20Marks

2. Draw the following to indicate conventional representation of (a) BSW thread having pitch of 50mm and (b) Acme thread having a pitch of 45mm. Show at least three threads in section.

20Marks

PART B

3. Draw sectional front view and top views of double riveted chain lap joint, taking $t=10\text{mm}$. Indicate dimensions.

20 Marks

4. Draw sectional Front View & Side View of a split muff coupling to connect two shafts of diameter 25mm. Indicate the dimensions. **20 Marks**

PART C

5. Figure 1 shows the details of 'SCREW JACK. Assemble the parts and draw the following views of the assembly.

- i. Sectional Front View
- ii. Top View **60 Marks**

6. Details of 'RAMS BOTTOM SAFETY VALVE' are shown in following Figure 2. Assemble the parts and draw the following views of the assembly.

- . Sectional Front view
- i. Top view **60 Marks**

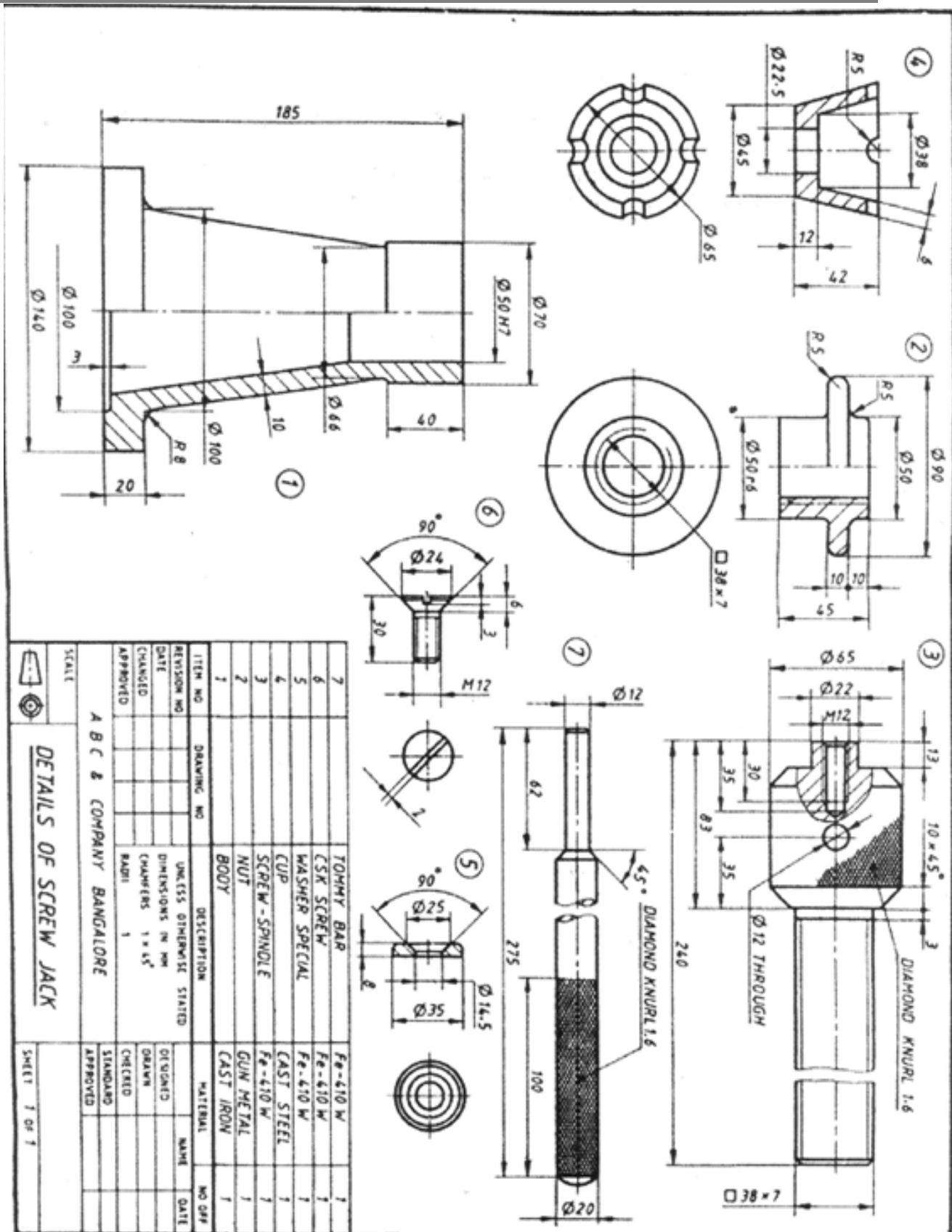


Figure 1 'SCREW JACK'

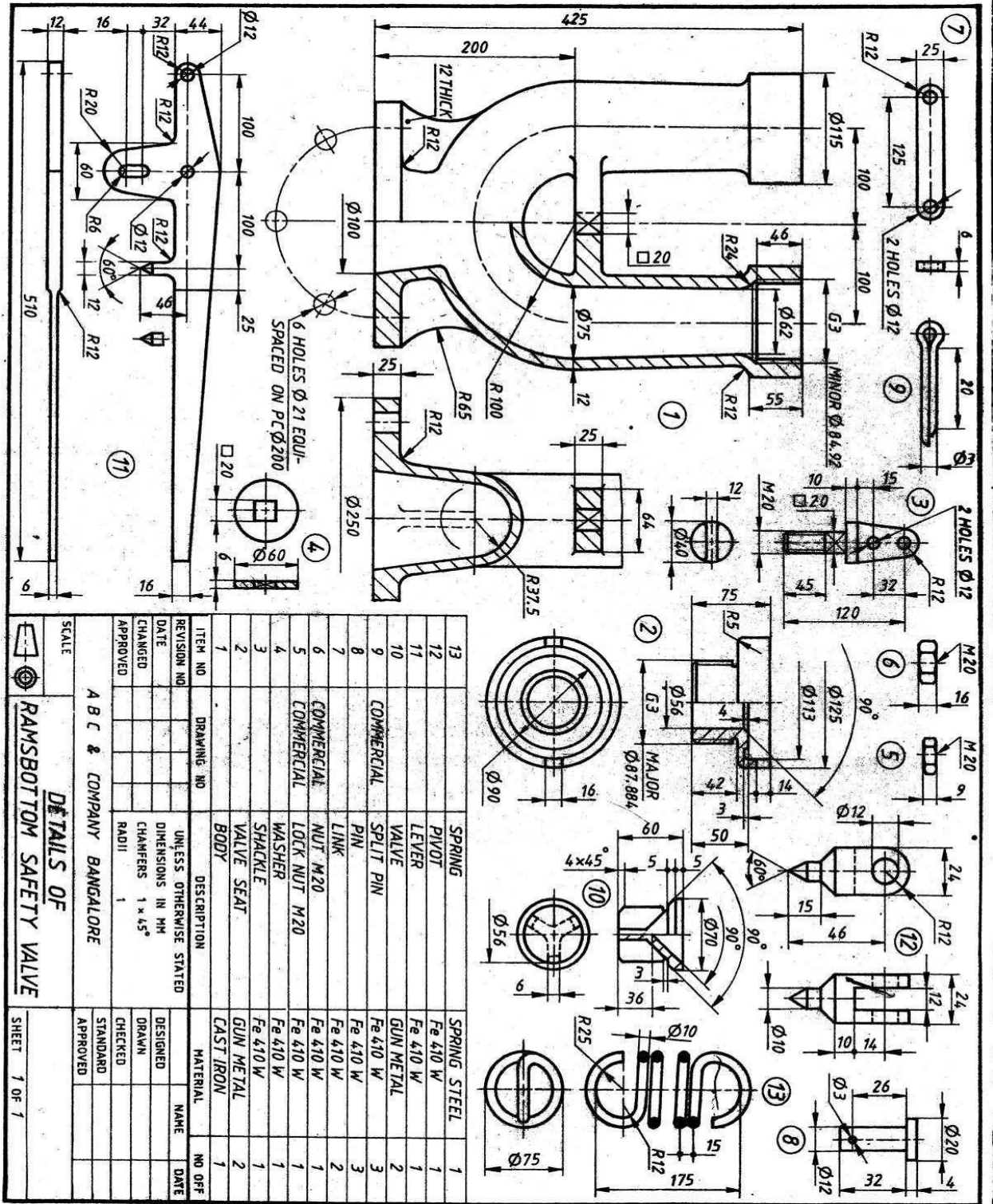


Figure 2 RAMS BOTTOM SAFETY VALVE

Adichunchanagiri University
Third Semester B.E. Degree (CBCS) Examination
 (MECHANICAL ENGINEERING)
 COMPUTER AIDED MACHINE DRAWING (18ME36A/46B)

Time: 3 Hours

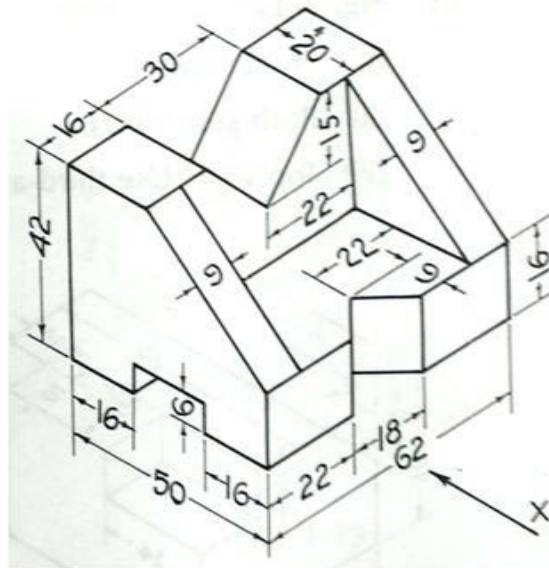
Max. Marks: 100

- Note:** 1. Answer any ONE question from each of the parts A, B and C.
 2. Use **FIRST ANGLE** projection only.
 3. Missing data if any may suitably be assumed.
 4. All the dimensions are in mm.

5. Part C Assembled View should be in 3D and other 2 views in 2D.

PART A

1. Using First Angle Projection, Draw the Orthographic Views of the object shown in fig below.



20Marks

2. Draw the following profiles of pitch 50mm.

- i. Square thread
 ii. ISO thread **20Marks**

PART B

3. Draw sectional front view and top views of the double riveted Zig-Zag lap joint, taking $t=10\text{mm}$. Indicate dimensions. **20 Marks**
 4. Draw sectional Front View & Side View of a Protected Type Flange Coupling to connect two shafts of diameter 30mm. Indicate the dimensions. **20 Marks**

PART C

5. Figure 1 shows the details of 'SCREW JACK'. Assemble the parts and draw the following views of the assembly.

- i. Sectional Front View
 ii. Top View **60 Marks**

6. Details of 'MACHINE VICE' are shown in following Figure 2. Assemble the parts and draw the following views of the assembly.

- . Sectional Front view
- i. Top view **60 Marks**

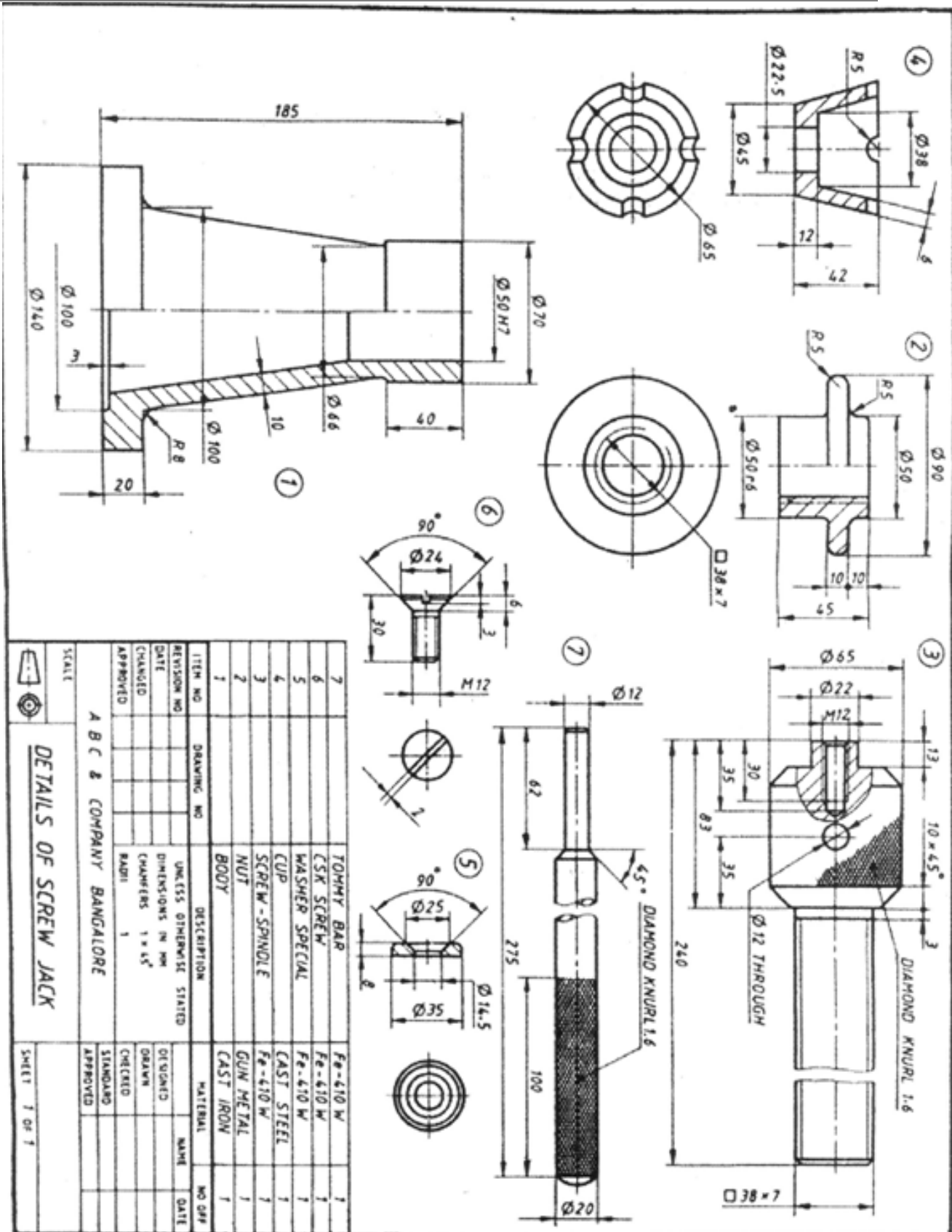


Figure 1 'SCREW JACK'

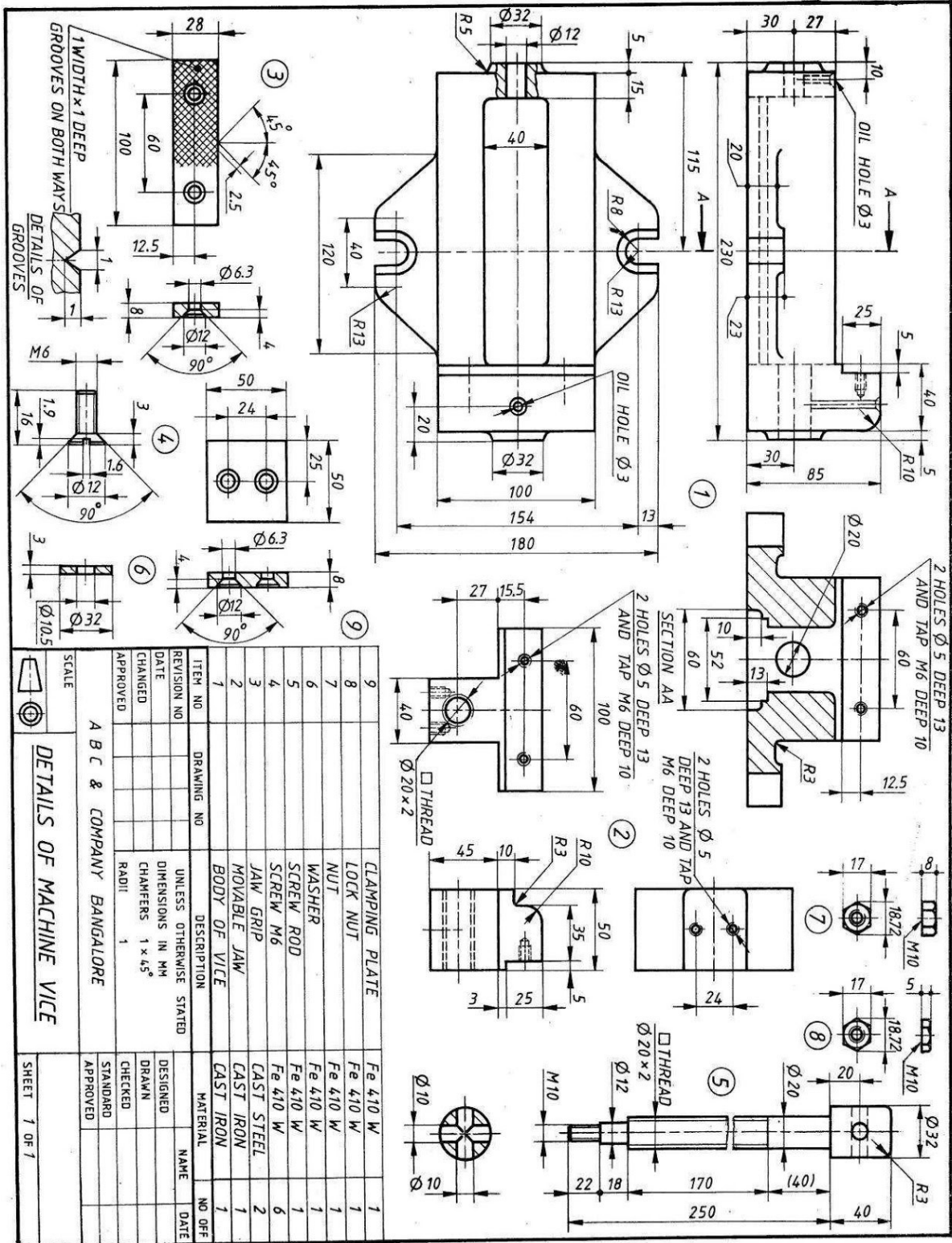


Figure 2 MACHINE VICE'

ii Top View **60 Marks**

5. Figure 2 shows the details of 'TAIL STOCK'. Assemble the parts and draw the following views of the assembly.

- i. Half Sectional Front view
- ii. Top view **60 Marks**

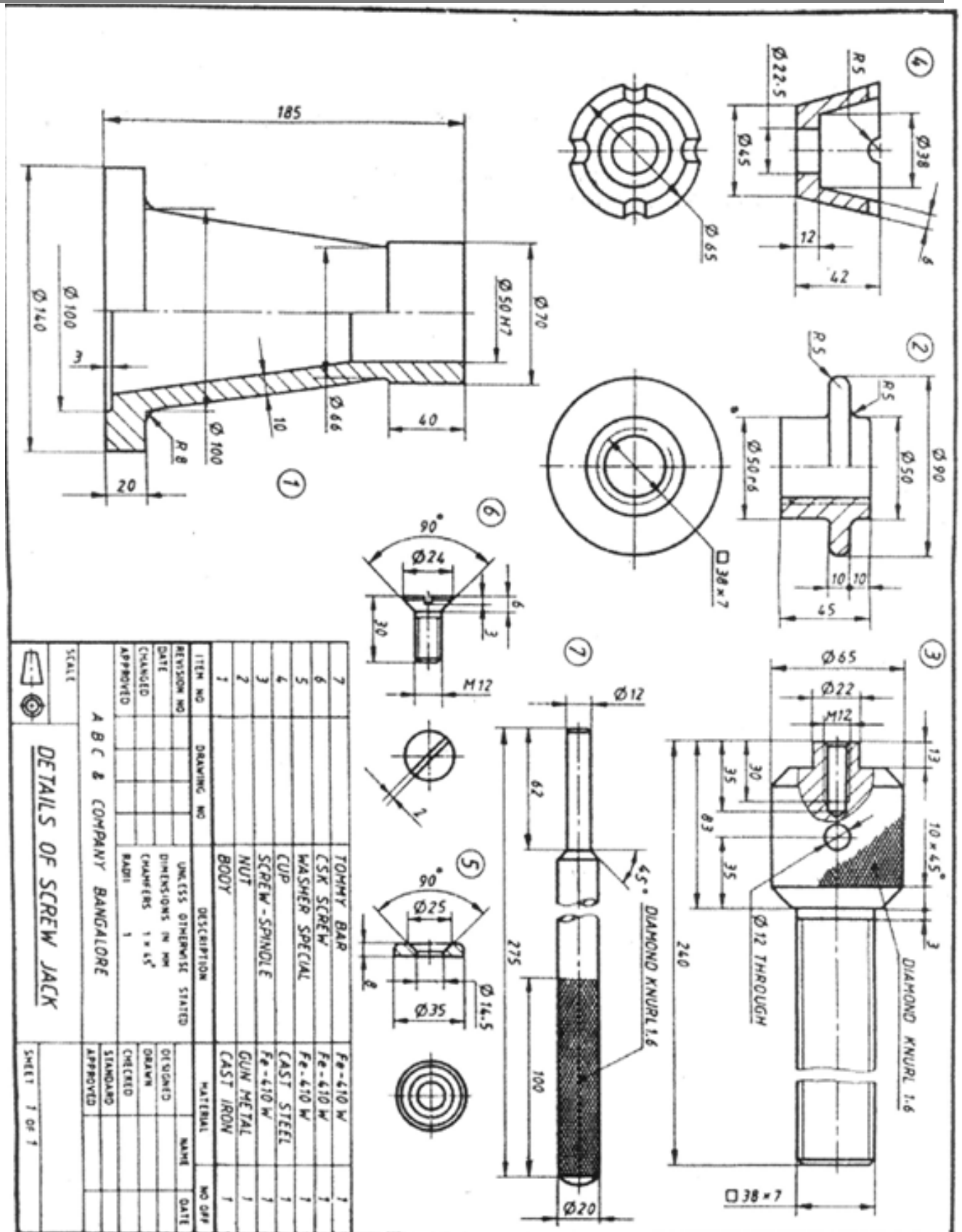


Figure 1 'SCREW JACK

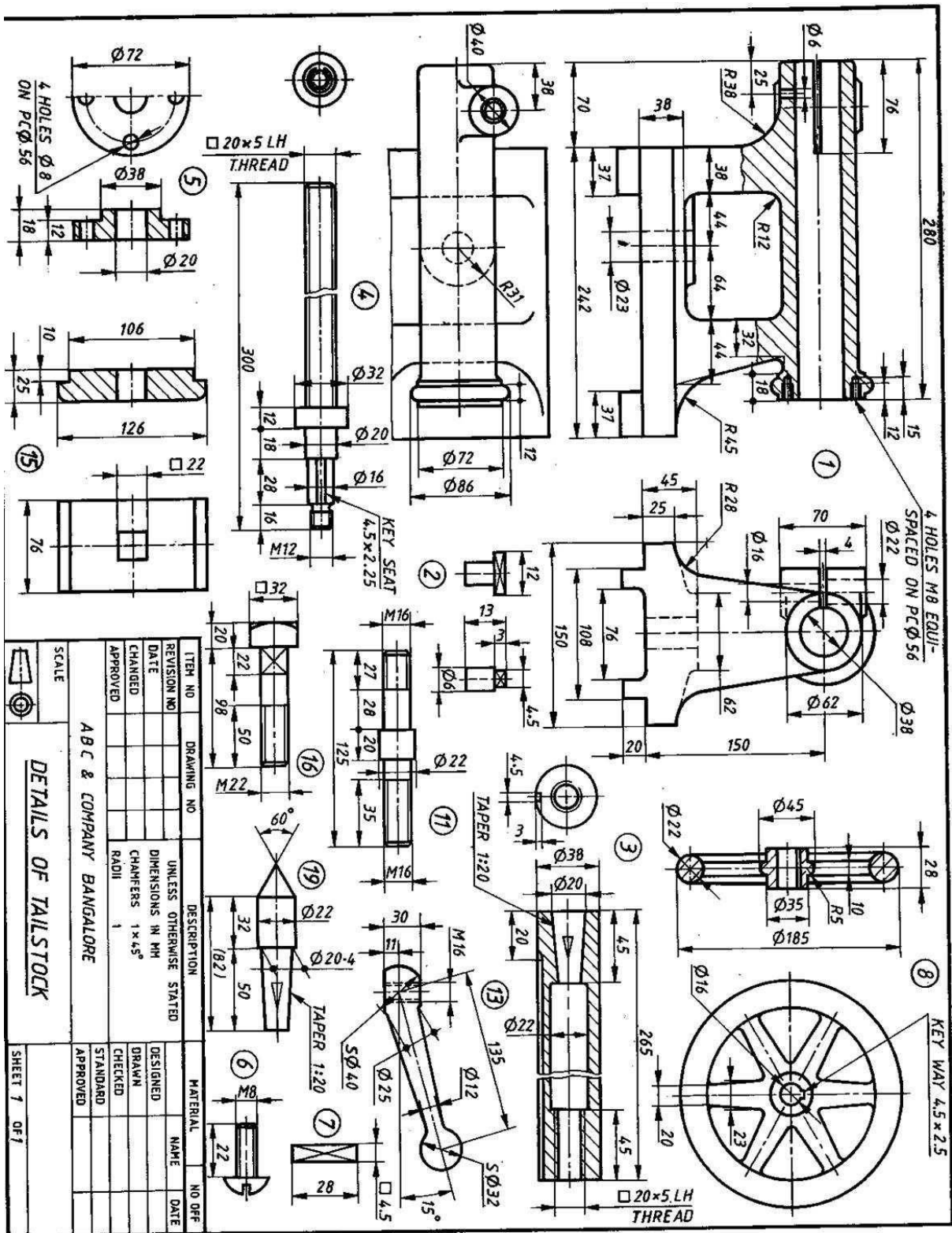


Figure 2 'TAIL STOCK'

Adichunchanagiri University
Third Semester B.E. Degree (CBCS) Examination
 (MECHANICAL ENGINEERING)
 COMPUTER AIDED MACHINE DRAWING (18ME36A/46B)

Time: 3 Hours Max. Marks: 100

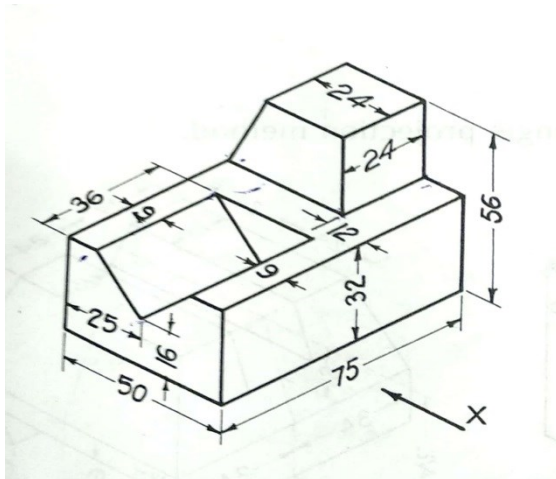
Note: 1. Answer any ONE question from each of the parts A, B and C.

2. Use **FIRST ANGLE** projection only.
3. Missing data if any may suitably be assumed.
4. All the dimensions are in mm.

5. Part C Assembled View should be in 3D and other 2 views in 2D.

PART A

1. Using First Angle Projection, Draw the Orthographic Views of the object shown in fig below.



20 Marks

2. Draw the following profiles.
 - a. Sellers thread, (b) BSW thread of pitch 40mm both **20 Marks**

PART B

3. Draw the sectional Front View and the Top View of a Double Riveted Butt Joint using rivets in Zig-Zag arrangements with double straps. Thickness of plates = 10 mm. Show all the dimensions on the drawing.

20 Marks

4. Draw the Sectional Front & Top View of an Oldham's Coupling to connect two shafts of diameter 30mm.

20 Marks

PART C

5. Details of 'SCREW JACK' are shown in following Figure 1. Assemble the parts and draw the following views of the assembly.

- i. Sectional Front View
- ii. Top View **60 Marks**

6. Figure 2 shows the details of 'SQUARE HEADED TOOLPOST'. Assemble the parts and draw the following views of the assembly.

- i. Half Sectional Front view
- ii. Top view **60 Marks**

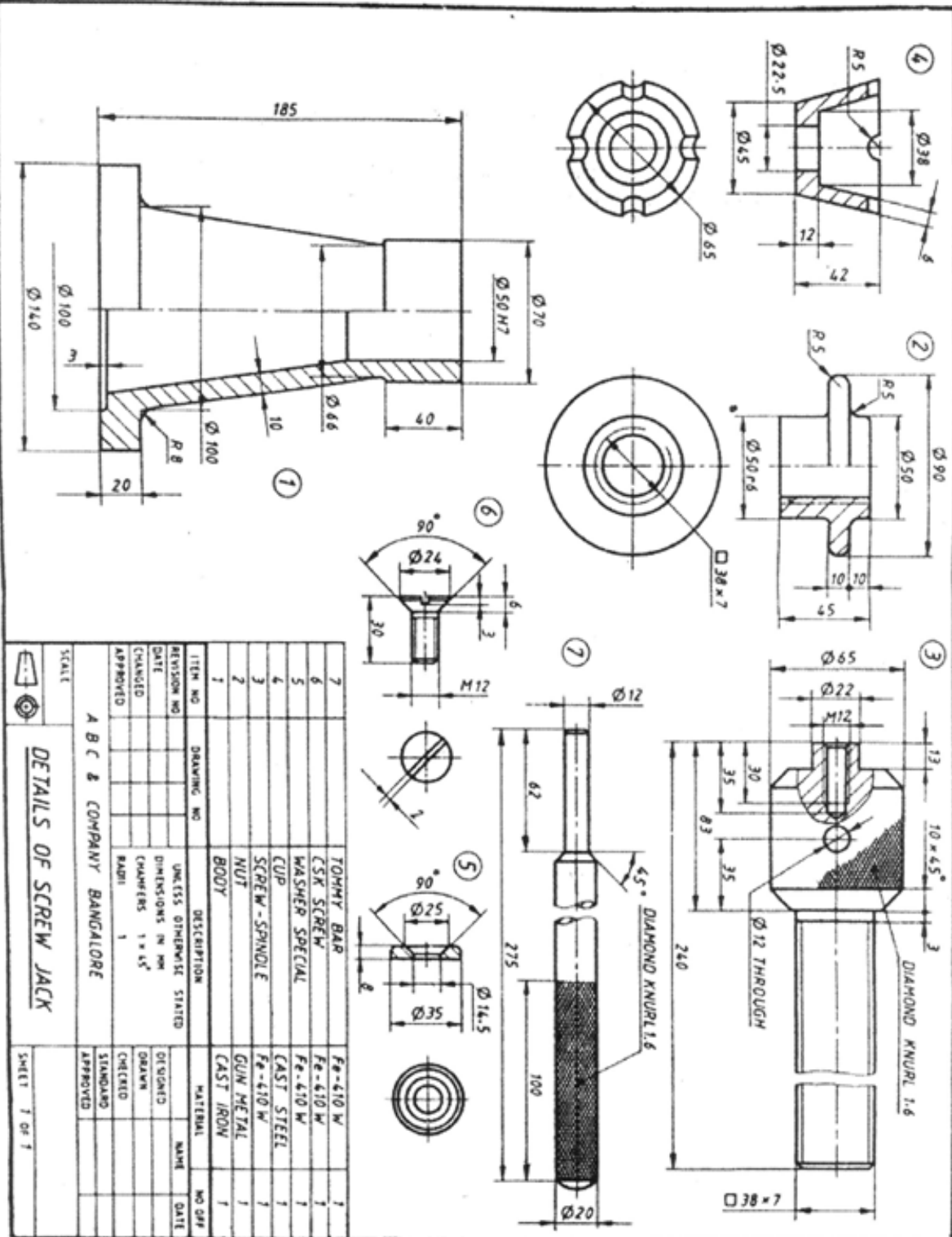


Figure 1 'SCREW JACK

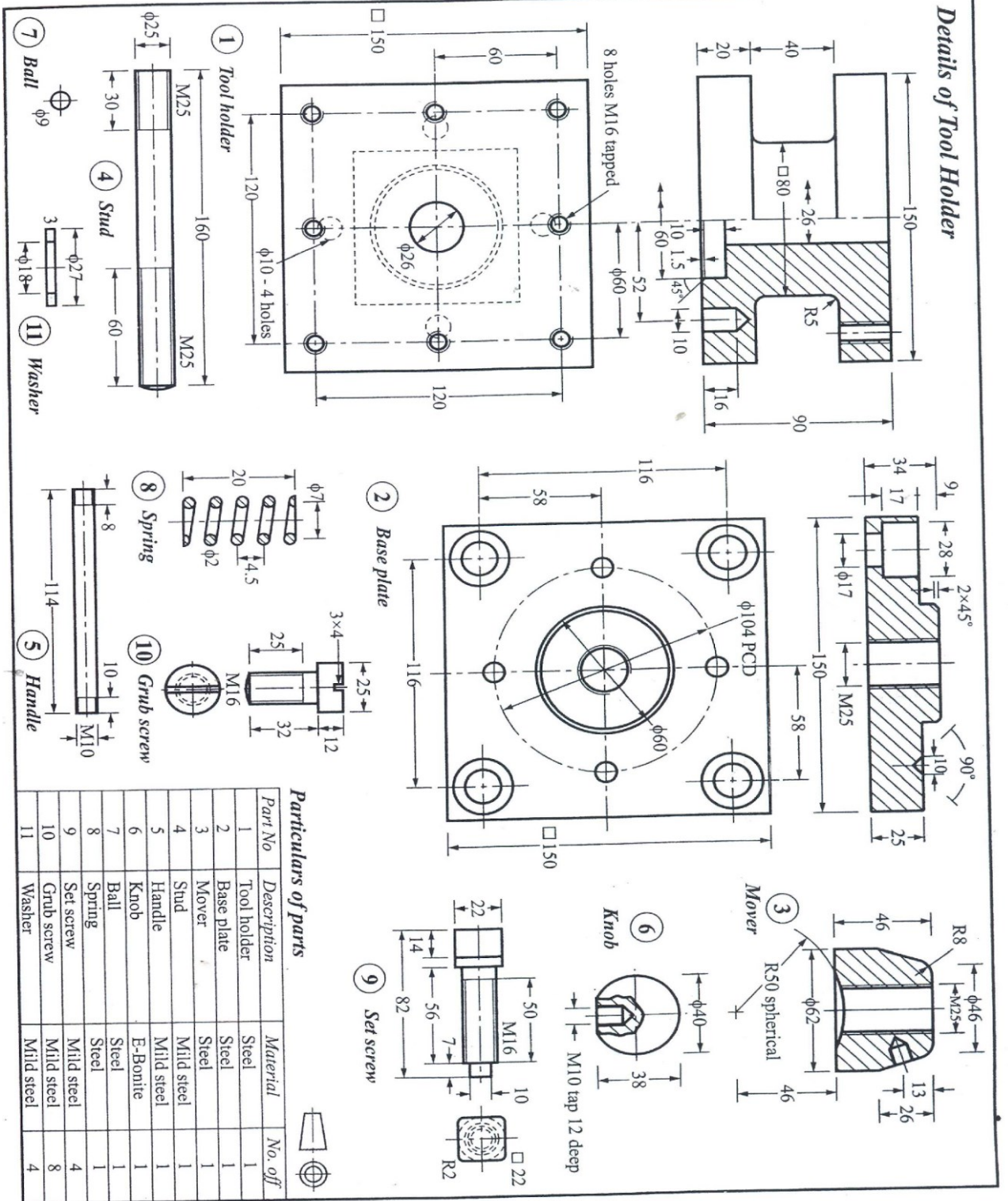


Figure 2 'SQUARE HEADED TOOLPOST'

Adichunchanagiri University
Third Semester B.E. Degree (CBCS) Examination
(MECHANICAL ENGINEERING)

COMPUTER AIDED MACHINE DRAWING (18ME36A/46B)

Time: 3 Hours Max. Marks: 100

Note: 1. Answer any ONE question from each of the parts A, B and C.

2. Use **FIRST ANGLE** projection only.
3. Missing data if any may suitably be assumed.
4. All the dimensions are in mm.

5. Part C Assembled View should be in 3D and other 2 views in 2D.

PART A

1. A square pyramid of 45mm edges of base and axis length 70mm rests on its base on the HP in such way that all of its base edges are equally inclined to VP. It is cut by a section plane perpendicular to the VP, inclined at 45° to the HP and bisecting the axis. Draw its sectional top view, sectional side view and true shape of section. **20Marks**
2. Draw the following profiles.
 - a. Sellers thread, (b) BSW thread of pitch 40mm both **20 Marks**

PART B

3. Draw the sectional Front View and the Top View of a Double Riveted Lap Joint using rivets in Zig-Zag arrangements. Thickness of plates = 10 mm. Show all the dimensions on the drawing.

20 Marks

4. Draw the Sectional Front & Top View of an Oldham's Coupling to connect two shafts of diameter 30mm.

20 Marks

PART C

5. Details of 'SQUARE HEADED TOOLPOST' are shown in following Figure 1. Assemble the parts and draw the following views of the assembly.

- i. Sectional Front View
- ii. Top View **60 Marks**

6. Figure 2 shows the details of 'SCREW JACK'. Assemble the parts and draw the following views of the assembly.

- i. Half Sectional Front view
- ii. Top view **60 Marks**

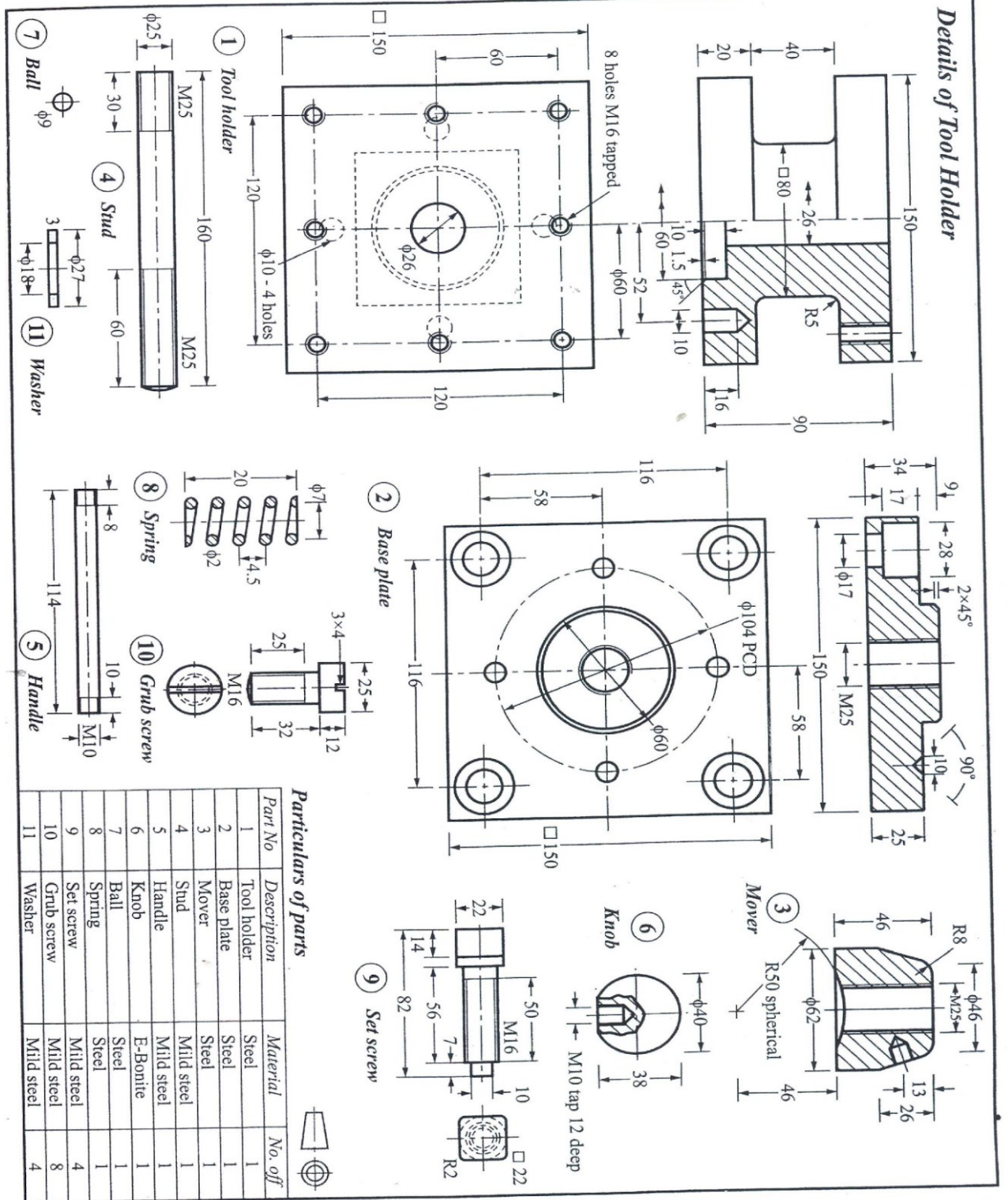


Figure 1 'SQUARE HEADED TOOLPOST'

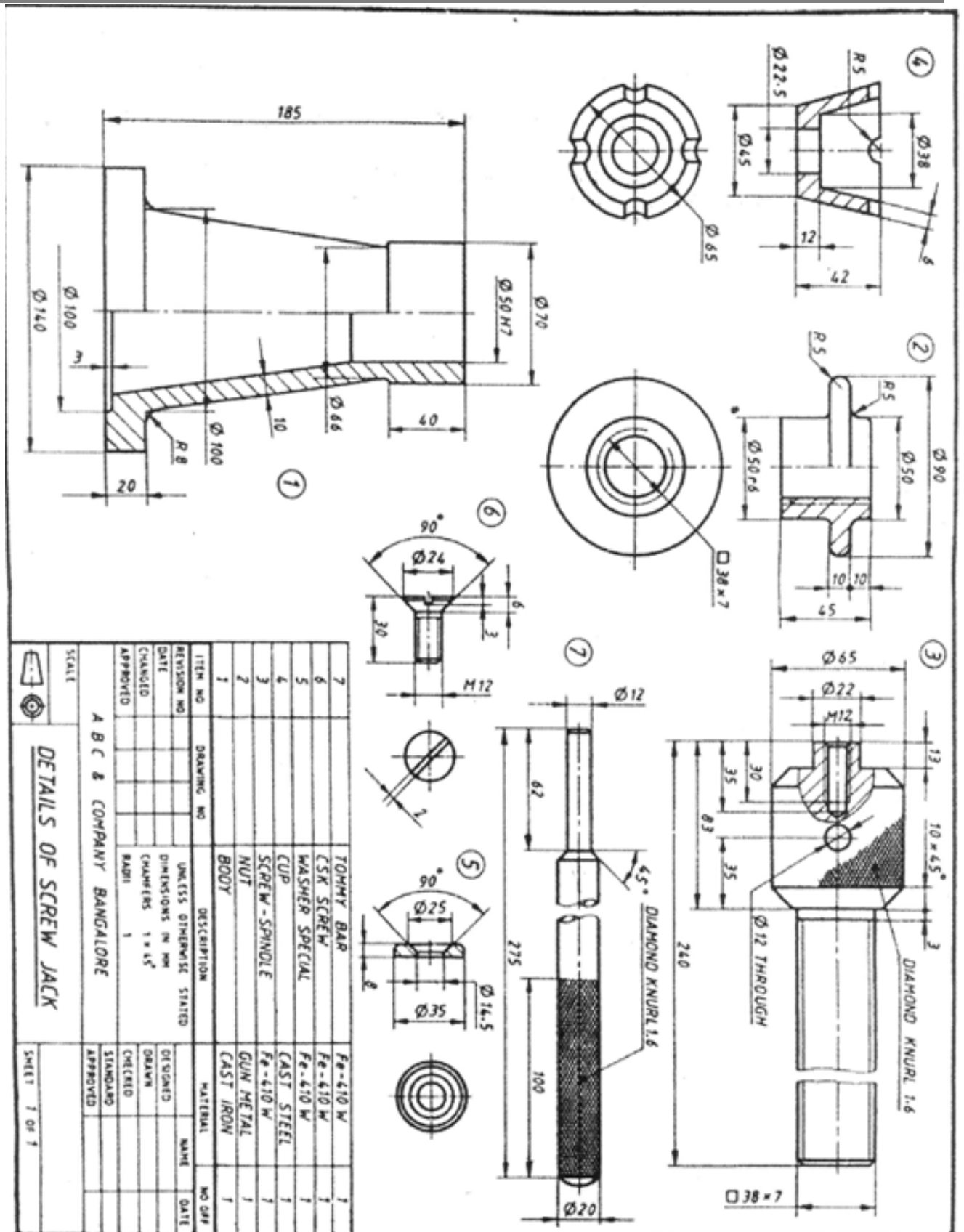


Figure 2 SCREW JACK

