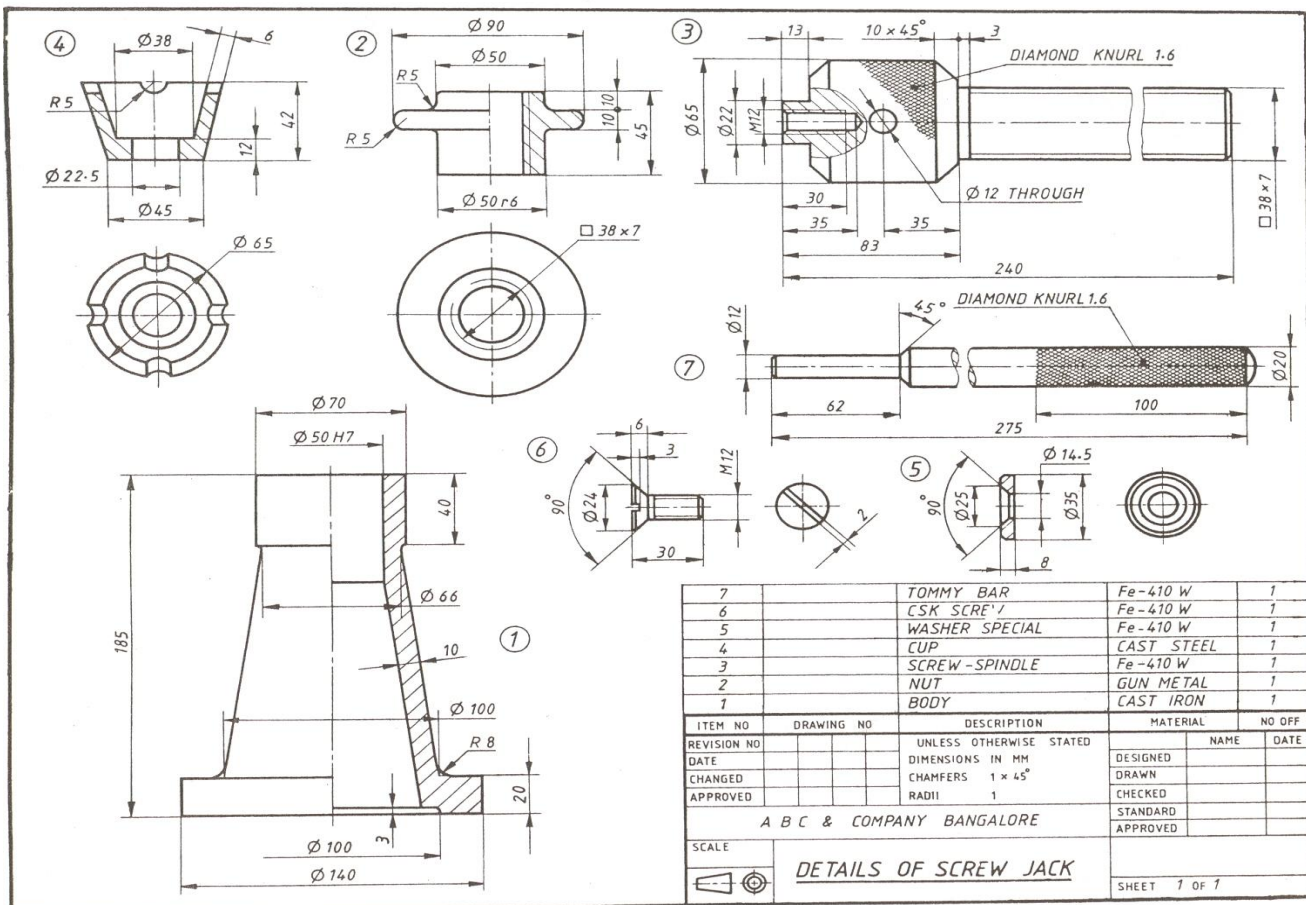


Internal Assessment Test - II

Sub:	COMPUTER AIDED MACHINE DRAWING	Code:	15ME36A
Date:	04/11/2016	Duration:	90 mins
		Max Marks:	50
		Sem:	3
		Branch:	MECH.

Answer three questions, Question No. 2 is compulsory.

	Marks	OBE	
		CO	RBT
1. Draw two views of a hexagonal headed bolt and nut with washer across flats (assembly) for a 25mm diameter bolt. Take the length of the bolt equal to 100mm and a thread length of 50mm. [20]		CO3	L1, L2
2. Draw a neat sketch of Gib headed key of diameter 20mm. Indicate all proportions and dimensions. [10]		CO4	L2, L3
3. Draw the sectional front view and top view of a single riveted butt joint with single cover snap to connect two plates of 12mm thickness. Use snap head rivet and show all the calculation on the answer sheet. Use chain riveting arrangement. [20]		CO4	L2, L3
4. Figure shows the details of Screw jack. Assemble the parts and show [20] a. Front view & b. Top view in section.		CO6	L3, L4



ITEM NO	DRAWING NO	DESCRIPTION	MATERIAL	NO OFF
7		TOMMY BAR	Fe-410 W	1
6		CSK SCREW	Fe-410 W	1
5		WASHER SPECIAL	Fe-410 W	1
4		CUP	CAST STEEL	1
3		SCREW-SPINDLE	Fe-410 W	1
2		NUT	GUN METAL	1
1		BODY	CAST IRON	1

REVISION NO	DATE	CHANGED	APPROVED	UNLESS OTHERWISE STATED DIMENSIONS IN MM CHAMFERS 1 x 45° RADI 1	DESIGNED	NAME	DATE

A B C & COMPANY BANGALORE

SCALE: DETAILS OF SCREW JACK

SHEET 1 OF 1

Course Outcomes		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1:	To analyze & draw the various sections of pyramids, prisms, cubes cones and cylinders resting on their bases in 2D.	3	2	-	-	2	-	-	-	-	-	-	-
CO2:	To create Orthographic views of machine parts with and without sectioning in 2D.	3	2	-	-	2	-	-	-	-	-	-	-
CO3:	To draw sectional views for threads with terminologies in 2D & Hexagonal and Square headed bolt and nut with washer, stud bolts with nut and locknut, flanged nut, slotted nut, taper and split pin for locking counter sunk head screw, grub screw, Allen screw assemblies in 2D.	3	-	-	-	2	-	-	-	-	-	-	-
CO4:	To draw Parallel key, Taper key and Woodruff Key as per the ISO standards in 2D & single and double riveted lap joints, butt joints with single/double cover straps, cotter and knuckle joint for two rods in 2D.	3	-	-	-	2	-	-	-	-	-	-	-
CO5:	To draw split muff, protected type flanged, pin type flexible, Oldham's and universal couplings in 2D.	3	-	-	-	2	-	-	-	-	-	-	-
CO6:	To analyze & create the 3-D geometric model of machine assembly by using detailed drawing of each given part and convert it to 2-D drawing with limits, fits and tolerance given for Plummer block, Ram bottom safety valve, I.C. Engine connecting rod, Screw Jack, Tailstock of lathe, Machine Vice and Lathe square tool post in 2D and 3D.	3	2	-	-	3	-	-	-	-	1	-	2

Cognitive level	KEYWORDS
L1	List, define, tell, describe, identify, show, label, collect, examine, tabulate, quote, name, who, when, where, etc.
L2	summarize, describe, interpret, contrast, predict, associate, distinguish, estimate, differentiate, discuss, extend
L3	Apply, demonstrate, calculate, complete, illustrate, show, solve, examine, modify, relate, change, classify, experiment, discover.
L4	Analyze, separate, order, explain, connect, classify, arrange, divide, compare, select, explain, infer.
L5	Assess, decide, rank, grade, test, measure, recommend, convince, select, judge, explain, discriminate, support, conclude, compare, summarize.

PO1 - *Engineering knowledge*; PO2 - *Problem analysis*; PO3 - *Design/development of solutions*; PO4 - *Conduct investigations of complex problems*; PO5 - *Modern tool usage*; PO6 - *The Engineer and society*; PO7- *Environment and sustainability*; PO8 - *Ethics*; PO9 - *Individual and team work*; PO10 - *Communication*; PO11 - *Project management and finance*; PO12 - *Life-long learning*

CI	Puneeth Kumar N
CCI	Jithender C
HOD-ME	Prof. Rajendra Prasad Reddy

Internal Assessment Test 2 – Nov. 2016

Scheme & Solution

Sub:	Computer Aided Machine Drawing				
Date:	04/11/2016	Duration: 90	mins	Max Marks: 50	Sem: III(A&B)

Code:	15ME36A
Branch:	ME

Note: Answer three questions. Question No. 2 is compulsory.

1. Draw two views of hexagonal headed bolt & nut with washer across flats (assembly) for a 25mm diameter bolt. Take the length of the bolt equal to 100mm and thread length of 50mm.

Hexagonal headed bolt and nut with washer across corners

Solu.:-

Given: $d = 25\text{mm}$, $L = 100\text{mm}$ & $X = 50\text{mm}$

To find:

Width across flats = $1.732 d = 43.3\text{ mm}$

Width across corners = $2 d = 50\text{mm}$

bolt thickness = $0.8 d = 20\text{ mm}$

nut thickness = $d = 25\text{mm}$

washer dia. = $2d + 1.5\text{ mm} = 51.5\text{ mm}$

washer thickness = $0.15 d = 3.75\text{mm}$

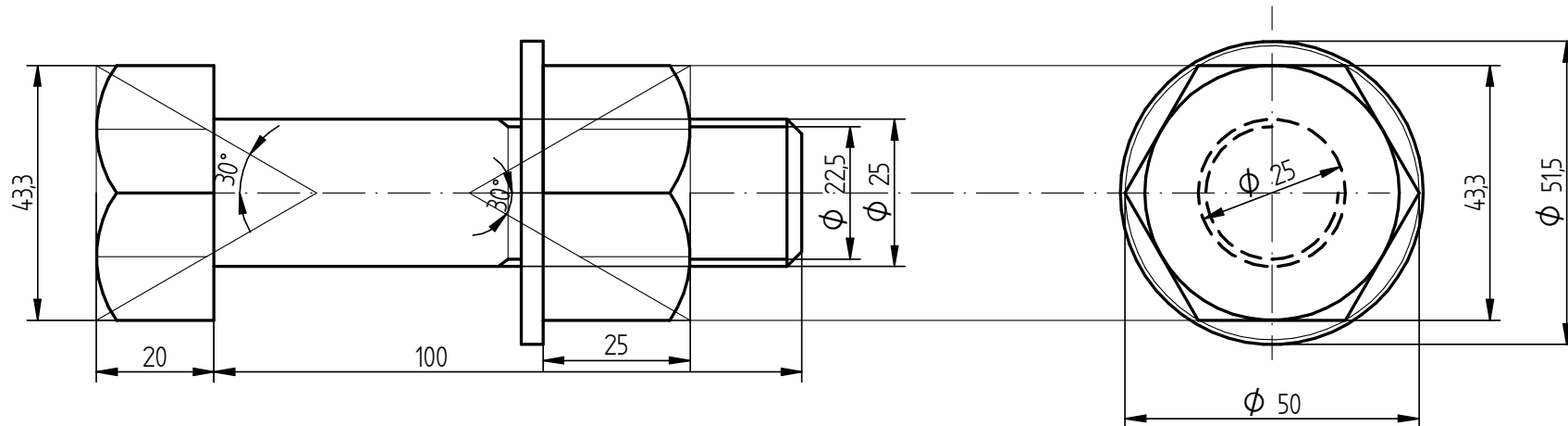
Root dia. = $0.9 d = 22.5\text{ mm}$

Scheme

Calculation & Dimension = 4 marks

front view = 10 marks

side view = 6 marks



2. Draw neat sketch of Gib headed key for diameter 20mm. Indicate all dimension & proportions.

Solu. Gib head key

Given shaft diameter = 20 mm

To find:

Width of the key $W = 0.25 D + 2 \text{ mm} = 7 \text{ mm}$

Thickness of the key = $0.66W = 4.62 \text{ mm}$

Gib head

Height of gib head = $H = 1.75 T = 8.08 \text{ mm}$

width of gib head = $B = 1.5T = 6.9 \text{ mm}$

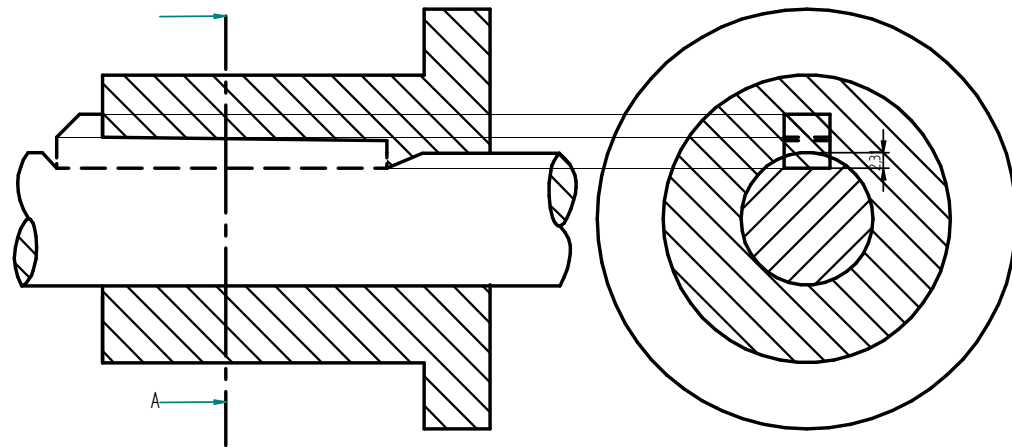
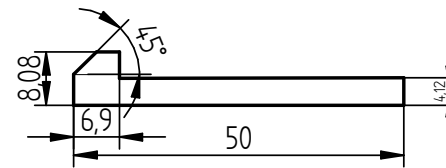
Scheme:

Calculations - 2 Marks

Gib head key to scale - 4 Marks

Assembly - 4 Marks

Gib head key



Shaft & Hub assembly showing gib head key

3. Draw the sectional front view and top view of a single riveted butt joint with single cover strap to connect two plates of 12mm thickness. Use snap head rivet and show all the calculations on the answer sheet. Use chain riveting arrangement.

Solution:-

Single riveted butt joint with single cover plate

Scheme:

Dimension & calculations = 4 Marks

Section plane & section = 4 Marks

Front view = 6 Marks

Top view = 6 Marks

Solu:- Given thickness of plate $t = 12 \text{ mm}$

To find:

Cover plate thickness = $t_1 = 1.125 t = 13.5 \text{ mm}$

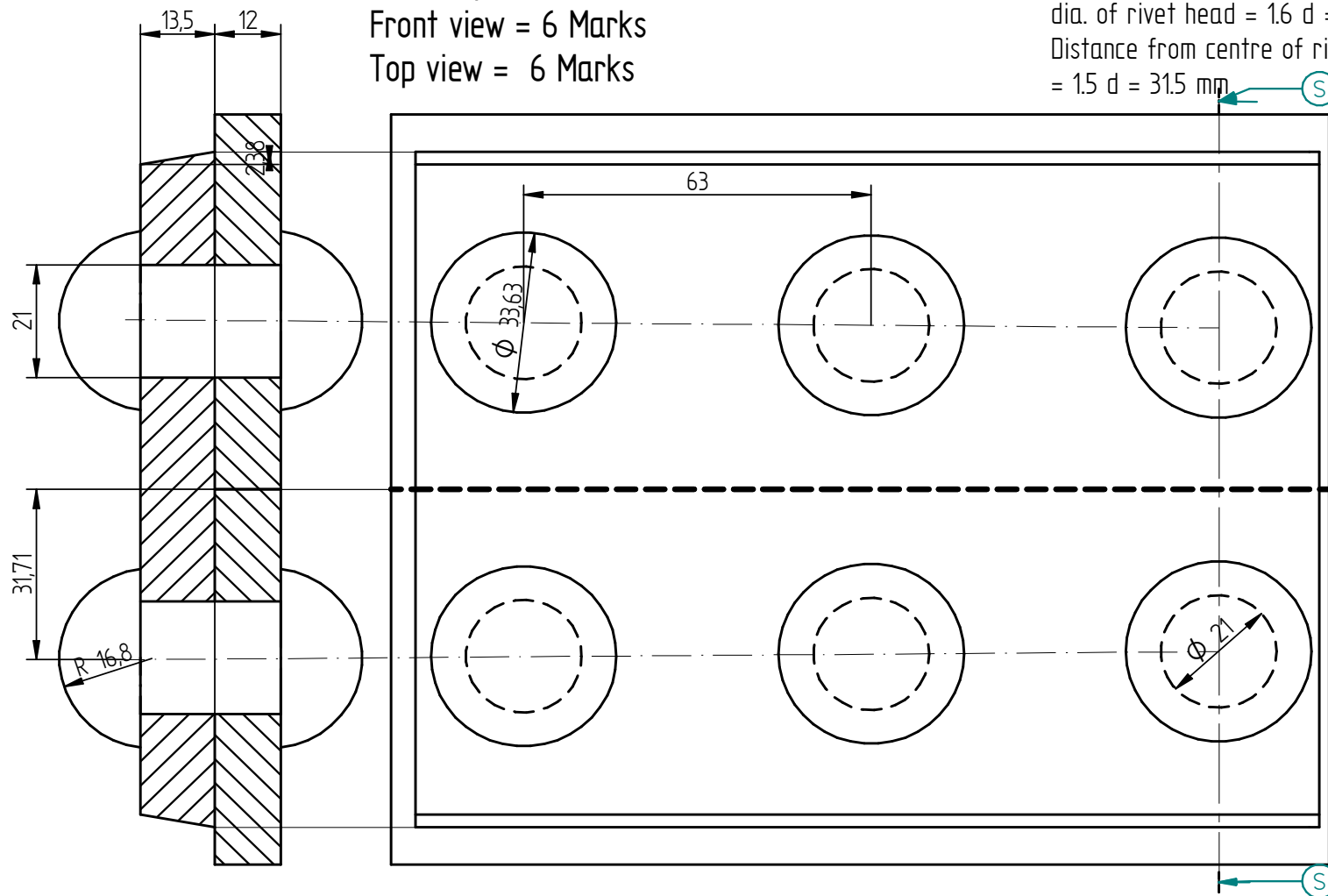
Dia. of rivet = $6\sqrt{t} = 20.78 \text{ mm} = 21 \text{ mm}$

Longitudinal pitch $P = 3 d = 63 \text{ mm}$

height of rivet head = $0.7 d = 14.7 \text{ mm}$

dia. of rivet head = $1.6 d = 33.6 \text{ mm}$

Distance from centre of rivet to end of the plate = $1.5 d = 31.5 \text{ mm}$



4. Figure shows the details of screw jack parts. Assemble the parts & show
 a. Front view & b. Top view in section.

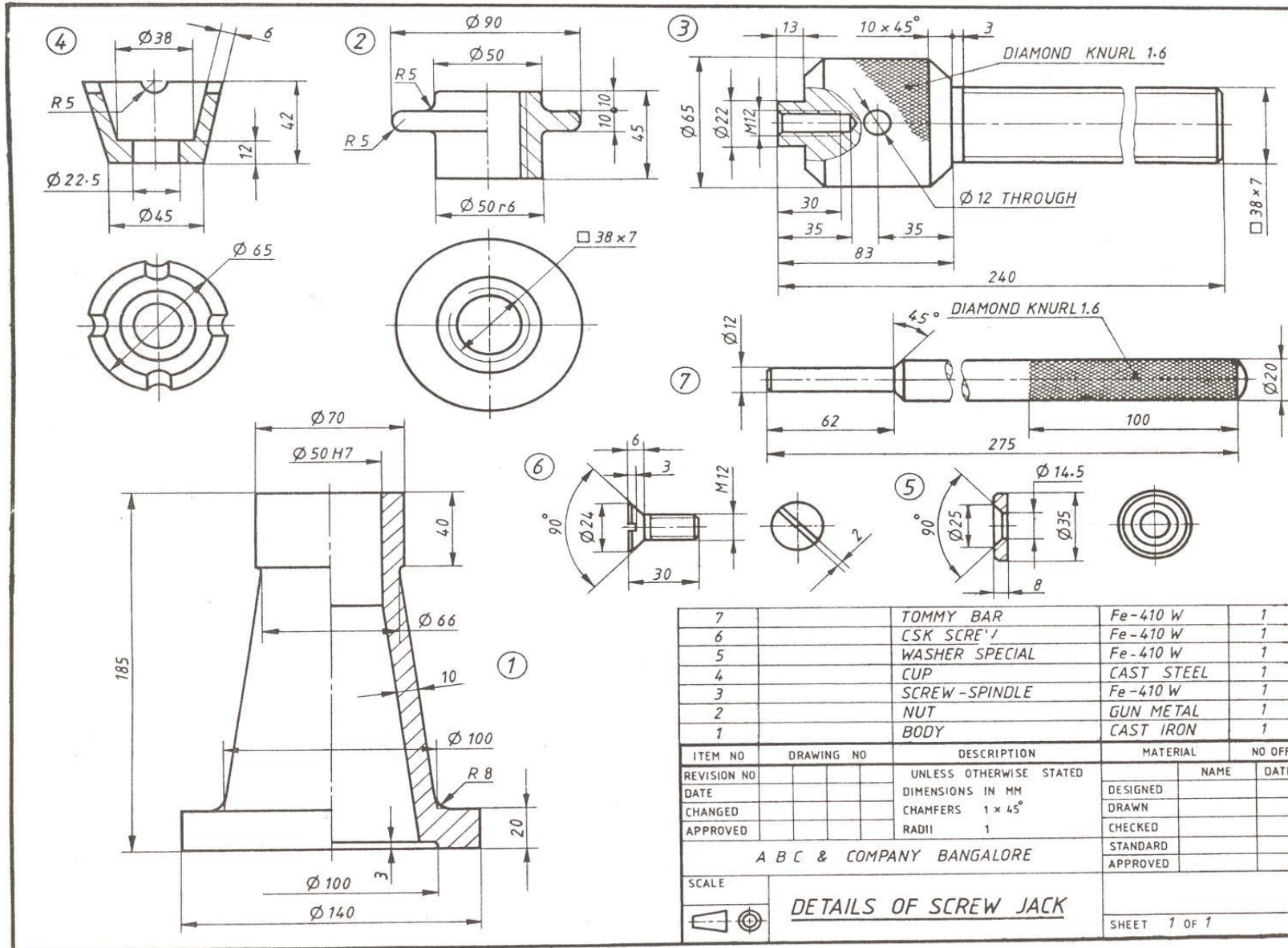
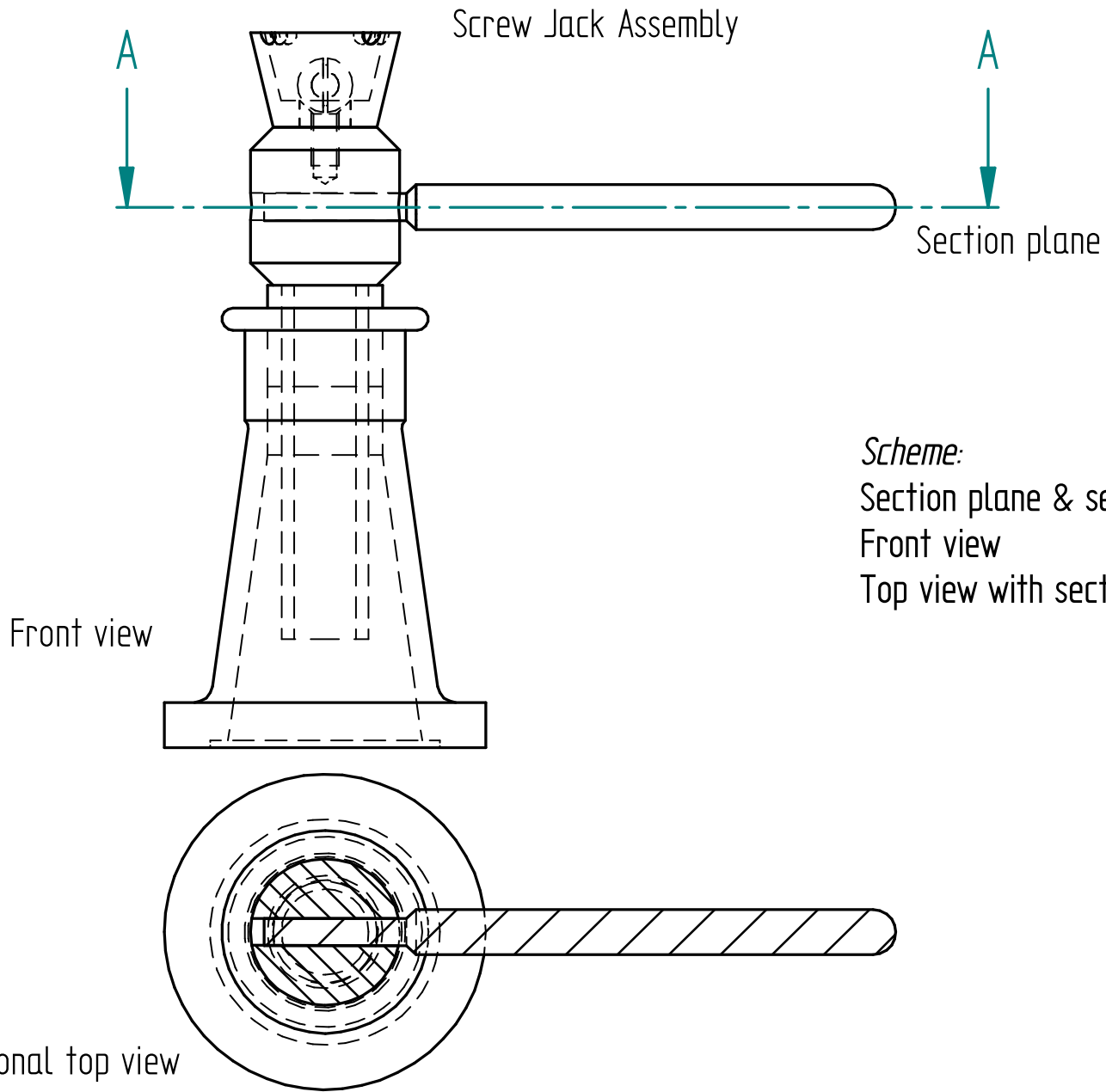


Figure- screw jack

Solution:-



Scheme:

Section plane & sectional view = 4 Marks

Front view = 10 Marks

Top view with section = 6 Marks