KPGU
Vadodara

Krishna School of Emerging Technology & Applied Research (KSET)

a constituent school of

Drs. Kiran & Pallavi Patel Global University (KPGU), Vadodara.

CERTIFICATE

This is to certify that Mr./Ms. KAMLESH MUKESH PATEL

of semester II Branch INFORMATION TECHNOLOGY Division A

Enrollment No. 2101202021 has satisfactorily complete his/her work in Engineering Graphics & Design(21GS2203) for the term ending in JULY 2022.

Date: 28-07-2022 **Place:** Krishna Edu Campus, Vadodara

Comp 28/7/22

Signature of Faculty **Head of Department**

DRS. KIRAN & PALLAVI PATEL GLOBAL UNIVERSITY
Established Under Gujarat Private Universities (Amendment) Act, 2021 (Gujarat Act No. 15 of 2021)
KRISHNA SCHOOL OF EMERGING TECHNOLOGY & APPLIED RESEARCH (KSET)
KPGU Vadodara

Engineering Graphics & Design Laboratory (21GS2203)

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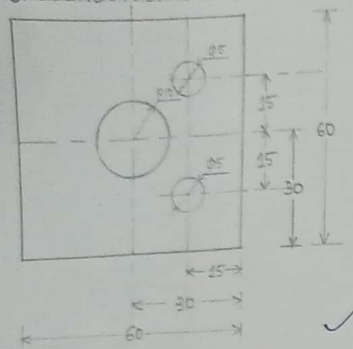
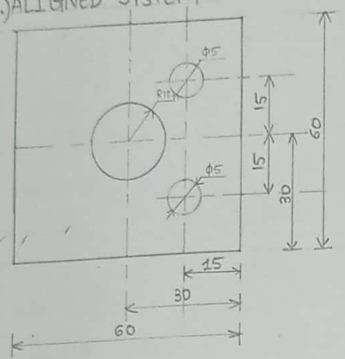
SYSTEM OF DIMENSIONING

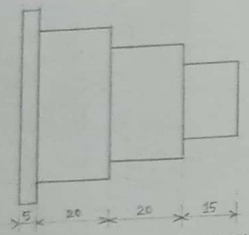
1) UNIDIRECTIONAL SYSTEM



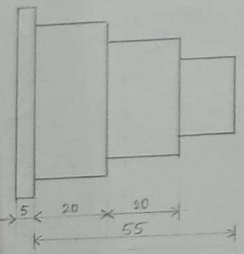
2) ALIGNED SYSTEM



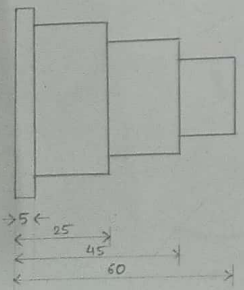
CHAIN DIMENSIONING



COMBINED DIMENSIONING

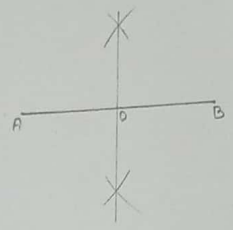


PARALLEL DIMENSIONING

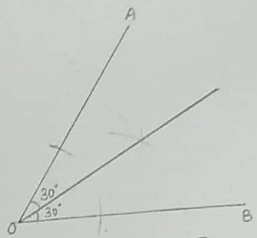


GEOMETRIC CONSTRUCTION

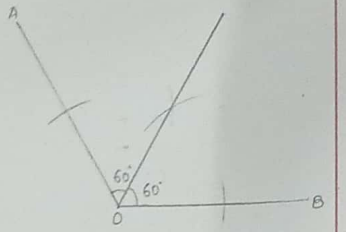
1.) BISECT A STRAIGHT LINE



2.) BISECT AN ANGLE

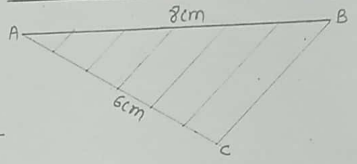


(i) ACUTE ANGLE

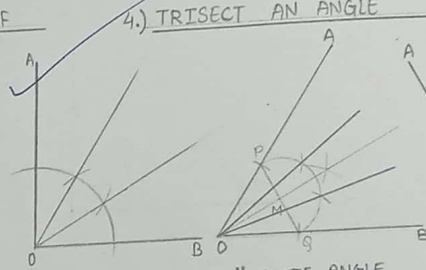


(ii) OBTUSE ANGLE

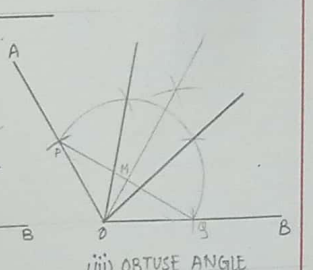
3.) DIVIDE A STRAIGHT LINE INTO NO. OF EQUAL PARTS



4.) TRISECT AN ANGLE

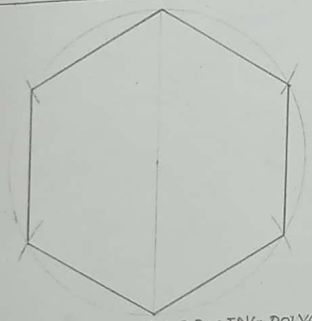


(i) RIGHT ANGLE (ii) ACUTE ANGLE

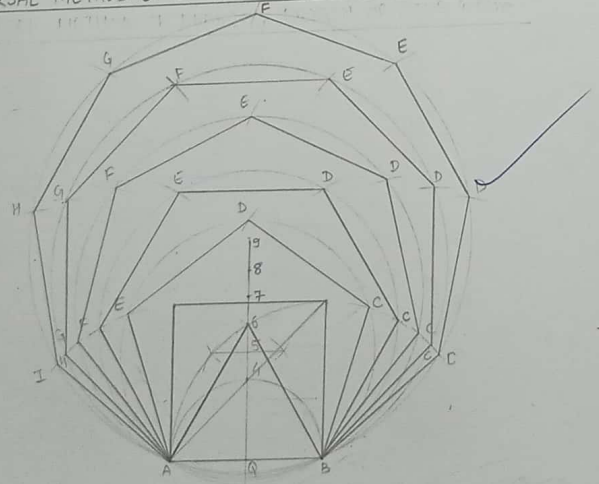


(iii) OBTUSE ANGLE

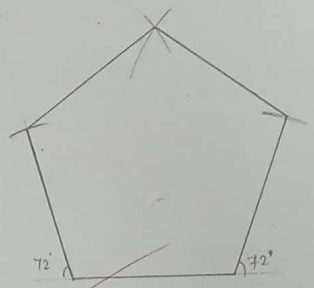
7.) DRAW REGULAR HEXAGON OF SIDE 40mm



8) UNIVERSAL METHOD OF DRAWING POLYGON OF SIDE 40mm

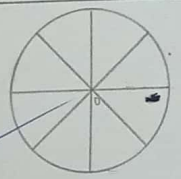


6.) DRAW A REGULAR PENTAGON OF SIDE 40mm

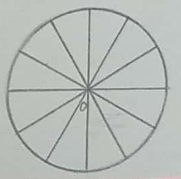


5.) DIVIDE A CIRCLE INTO EIGHT AND TWELVE EQUAL PARTS

8 PARTS



12 PARTS



	DATE	SIGN.
STD.	23/04/22	
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COMP.	30/4/22	
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BRANCH : BTECH IT		
ENROLL. No. : 2101202021		
SCALE : 1:1		

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VARNAMA, VADODARA

PRACTICE SHEET

SHEET No. :

Engineering Graphics and Design Laboratory / LAB PRACTICE (Mechanical Engineering)

SHEET 01

ENGINNERING SCALES

1. Construct a scale of 1.5 cm = 1 dm to read up to 1 meter and show on its length of 0.75meter.
2. Construct a plain scale of R.F. 1:100 to show meters and decimeters. Maximum measurement required is 10 meters. Indicate 7 m 5 dm on the scale.
3. The distance between Ahmedabad and Surat is 250 Km. On road map its equivalent distance measure15 cm. Draw a diagonal scale showing kilometer and indicate on it the distance between following stations.
   (a) Ahmedabad – Bharuch – 123Km.
   (b) Baroda – Bharuch -50Km.
   (c) Bharuch – Surat – 100Km.
4. Construct a diagonal scale of representative fraction = (1/36) showing yard, foot and inch. Scale should be long enough to measure 5 yards. Show distance 2-yard, 1 foot and 5 inches on it.

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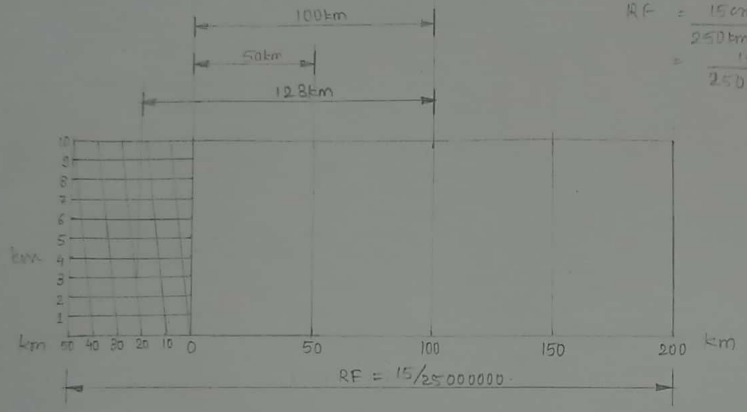
Date: 15/04/2022	Date: 15/04/2022	Date: 15/04/2022

3. The distance between Ahmedabad and Surat is 250km. On road map its equivalent distance measure 15cm. Draw a diagonal scale showing kilometer and indicate on it the distance between following stations

(a) Ahmedabad - Bharuch - 123 km
(b) Baroda - Bharuch - 50km
(c) Bharuch - Surat - 100km

Solution:

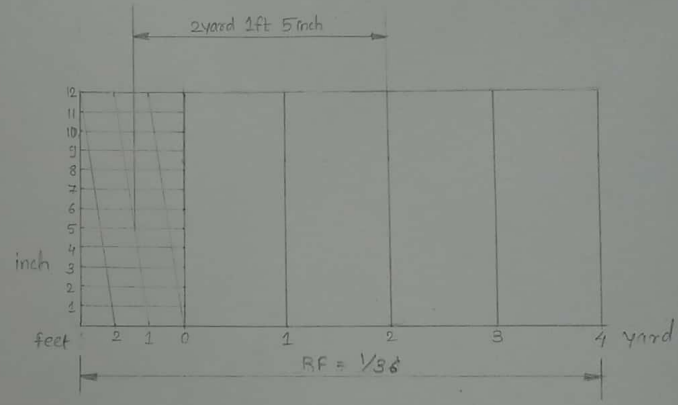
LOC = 15cm
RF = $\frac{15cm}{250km \times 100000}$ = $\frac{15}{25000000}$



4. Construct a diagonal scale of representative fraction = (1/36) showing yard, foot and inch. Scale should be long enough to measure 5yards. Show distance 2yard, 1 foot and 5 inches on it.

Solution: RF = $\frac{1}{36}$

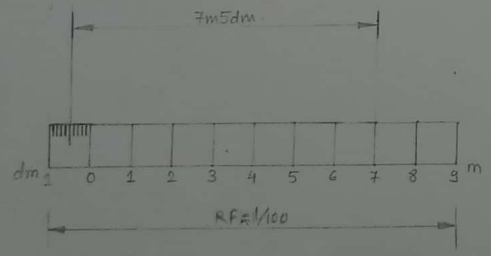
LOS = RF × max. dist
= $\frac{1}{36}$ × 5yard = $\frac{1}{36}$ × 5 × 3 × 12 inches = 5 inches



2. Construct a plain scale of RF 1:100 to show meter and decimeters. Maximum measurement required is 10meters. Indicate 7m 5dm on the scale

Solution: RF = $\frac{1}{100}$ max length = 10m

LOS = $\frac{1}{100}$ × 10m = $\frac{1}{100}$ × 10 × 100 = 10cm



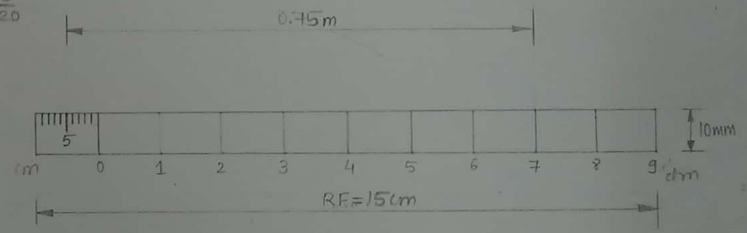
1. Construct a scale of 1.5cm = 1dm to read up to 1m and show on its length of 0.75meter.

Solution:

RF = $\frac{1.5cm}{1dm}$ = $\frac{1.5 \times 10}{10 \times 10}$ = $\frac{3}{20}$

RF = $\frac{1}{6.666}$

LOS = RF × max dist
= $\frac{15}{100}$ × 100
= 15cm



ALL DIMENSIONS ARE IN MM

	DATE	SIGN.
STD.	19/5	
FAIR	26/5	
COMP.	07/07	
NAME : KAMLESH PATEL		
SCHOOL : ☑ KSET / ☐ KSDS		
BRANCH : BTECH IT		
ENROLL. No. : 2101202021		
SCALE : 1:1		

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Vadodara

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ENGINEERING SCALES

SHEET No. : 01

Complete
07/07/2022

Engineering Graphics and Design
Laboratory / **LAB PRACTICE (Mechanical Engineering)**

SHEET 02

LOCI OF POINTS

1. A Link OA, 80 mm long oscillates around O, 60^0 to right side and returns to its initial vertical Position with uniform velocity. Meanwhile point P initially on O starts sliding downwards and reaches end A with uniform velocity. Draw locus of point P.
2. Rod AB, 100 mm long, revolves in clockwise direction for one revolution. Meanwhile point P, initially on A starts moving towards B and reaches B. Draw locus of point P.
3. O1ABO2 is a four-bar chain with the link O1O2as the fixed link. Driving crank O1A is 30 mm long. Driven crank O2B is also 30 mm long. Connecting link AB is 90 mm long. Distance between O1 andO2 is 90 mm. Two cranks are in opposite directions as shown in fig. Draw the loci of points P and R for one complete revolution of the driving crank. The point P is the mid-point of the connecting link AB and the point R is 35 mm from A on BA extended.

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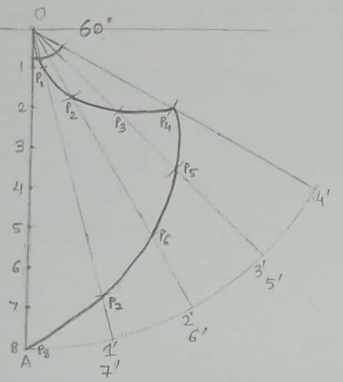
LOCI OF POINTS

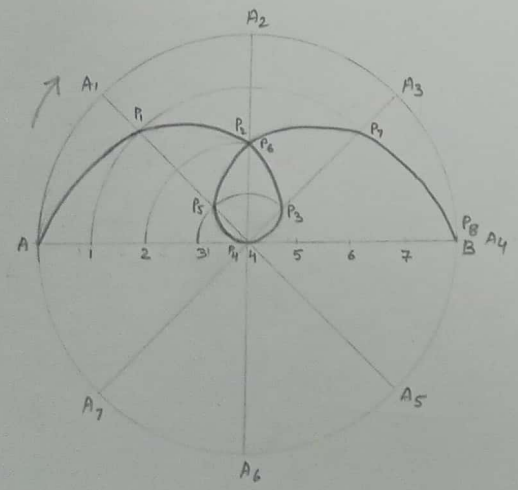
1. A link OA 80mm long oscillate around O, 60° to right side and returns to its initial vertical position with uniform velocity. Meanwhile point P initially on O starts sliding downward and reaches end A with uniform velocity. Draw locus of point P.

OA = 80mm
Θ = 60°



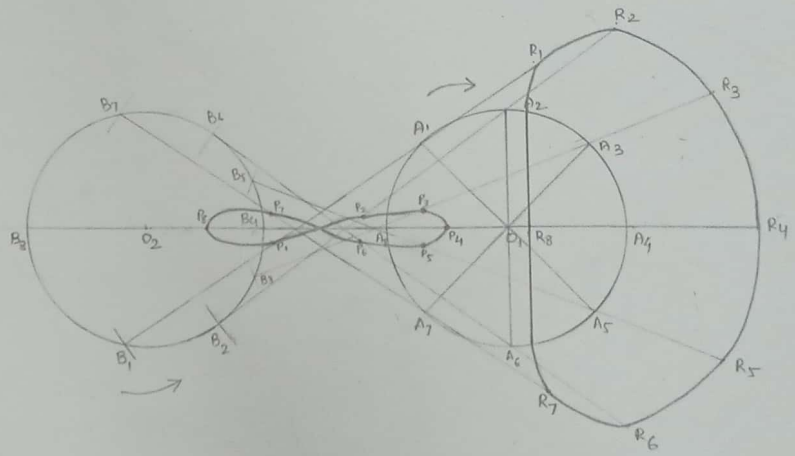
2. Rod AB, 100mm long, revolves in clockwise direction for one revolution. Meanwhile point P, initially on A starts moving towards B and reaches B. Draw locus of point P.

AB = 100mm



3. O1ABO2 is a four-bar chain with the link O1O2 as the fixed link. Driving crank O1A is 30mm long. Driven crank O2B is also 30mm long. Connecting link AB is 90mm long. Distance between O1 and O2 is 90mm. Two cranks are in opposite direction as shown in fig. Draw the loci of point P and R for one complete revolution of the drinking crank. The point P is the mid point of the connecting link AB and the point R is 35mm from A on BA extended.

$O_1A = O_2B = 30mm$
$O_1O_2 = 90mm$
A–R = 35mm



ALL DIMENSIONS ARE IN MM

	DATE	SIGN.
STD.	15/4	
FAIR	18/4	
COMP.	25/4	
NAME : KAMLESH PATEL		
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BRANCH : BTECH IT		
ENROLL. No. : 2101202021		
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LOCI OF POINTS
SHEET No. : 02

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Engineering Graphics and Design Laboratory / LAB PRACTICE (Mechanical Engineering)

SHEET- 03

ENGINNERING CURVES

1. Draw parabola by Tangent method. Take base 80 mm and height 50 mm.
2. Draw a hyperbola passing through the point P (60, 40) co-ordinates X and Y by rectangle method.

3. Draw Inferior Epitrochoid generated by moving point P which is20 mm from center of rolling circle. Take rolling circle radius as 25mm and directing circle radius as 75mm. The rolling circle rolls for one revolution without slippage. Draw normal & tangent at any point on the curve.

4. A string is unwounded from a half hexagon of 25 mm side &half circle of 50mm diameter. Draw the locus of end P for unwinding the one turn of string. String is kept tight during the operation of unwinding. Give the name of the curve. Draw the tangent normal to the curve any point.

5. The foci of an ellipse are 100 mm apart. The minor axis 80 mm long determine the length of major axis and draw the half ellipse by oblong method another half by concentric circle method.

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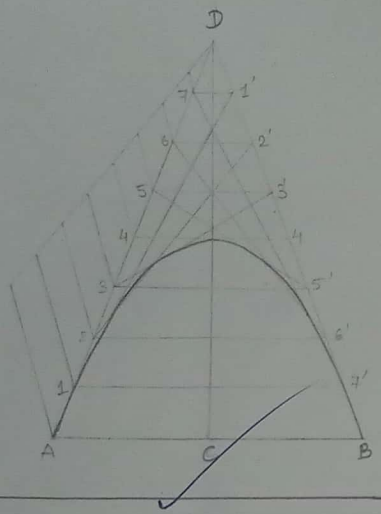
1.)



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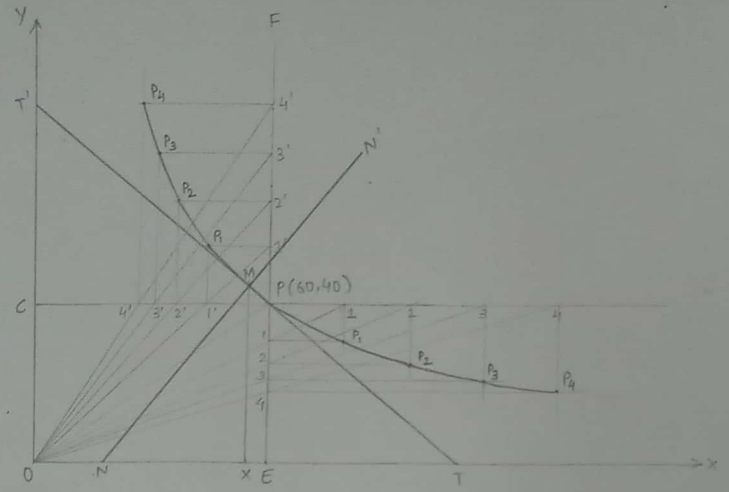

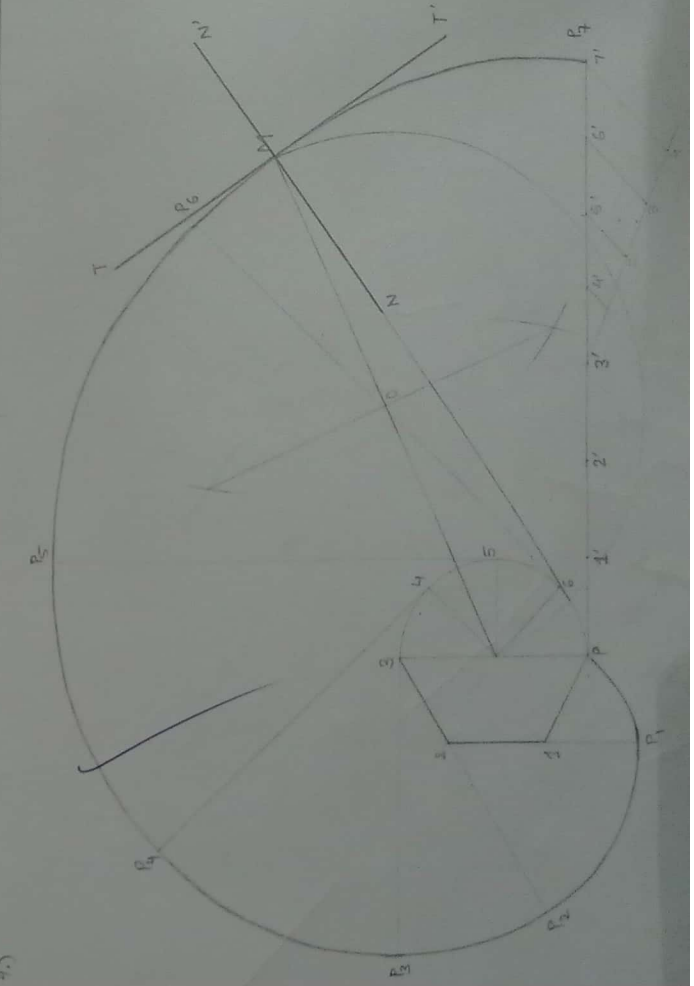

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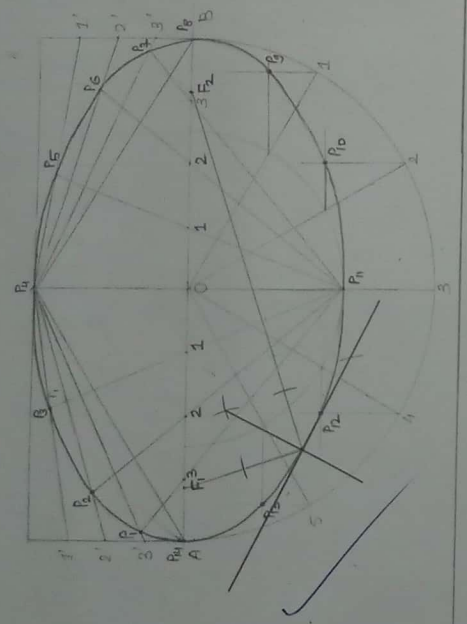

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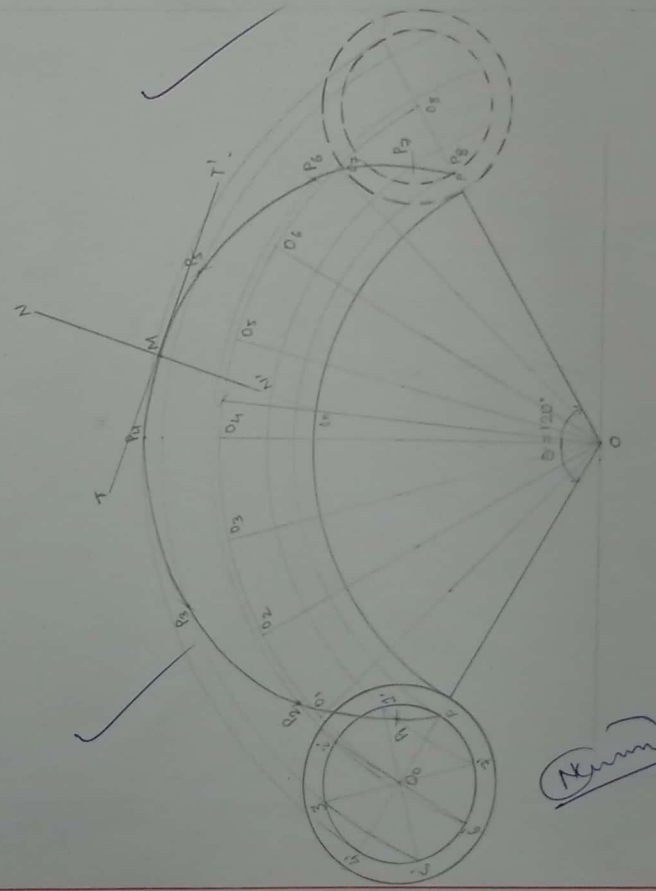

	DATE	SIGN.
STD.	07/05/22	
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COMP.	09/07/22	

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ENROLL. No. : 2101202021
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ENGINNERING CURVES
SHEET No. : 03

Engineering Graphics and Design
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SHEET- 04

PROJECTION OF LINES AND PLANES

1. The top view of a straight-line AB 60 mm long measure 46 mm, while the length of its front view is 53 mm. the one end A is 15 mm above H.P. and 20 mm in front of V.P. Draw projection of straight-line AB and find its inclination with H.P. and V.P.

2. The distance between the two end projectors of a straight-line AB is 60 mm point A is 5 mm above HP and 30 mm in front of VP. Point B is 40 mm above HP and 50 mm behind VP. Draw the projection and find inclination of straight-line AB with HP and VP and the true length of the line.

3. ABCD is a rhombus of diagonals AC= 110 mm and BD= 70 mm. Its corner A is in the H.P. and the plane is inclined to the H.P. such that the plan appears to be a square. The plan of the diagonal AC makes an angle of 20^0 to the V.P. Draw the projection of the plane and find its inclination with H.P.

4. A regular hexagon plate, 35 mm side resting on one of its corners in HP. The diagonal through that corner is inclined at 40° to HP. And (a) the plan of the diagonal inclined to VP by 30° and (b) diagonal is inclined at 30° to VP.

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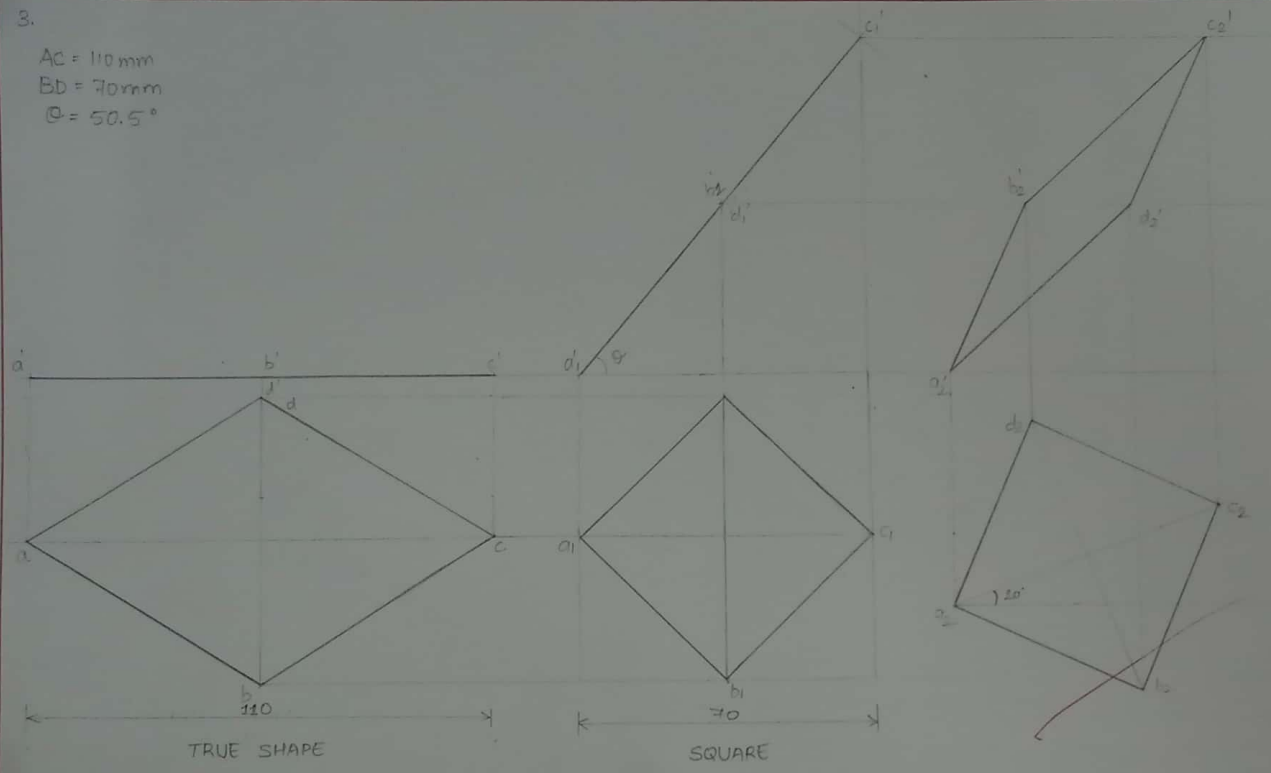
3.

AC = 110 mm
BD = 70 mm
Θ = 50.5°



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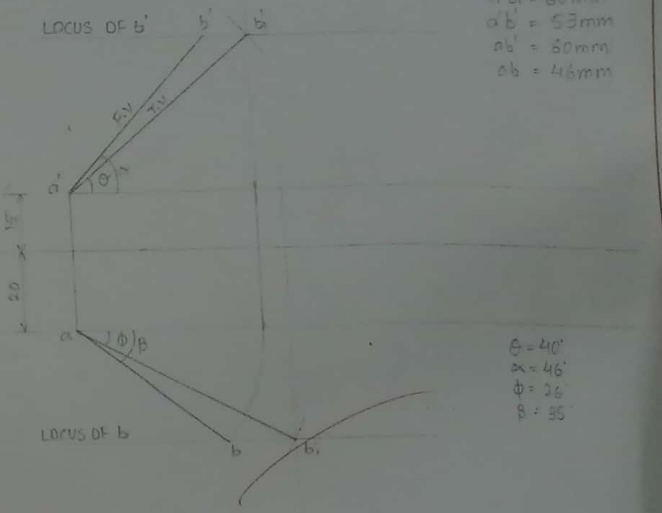

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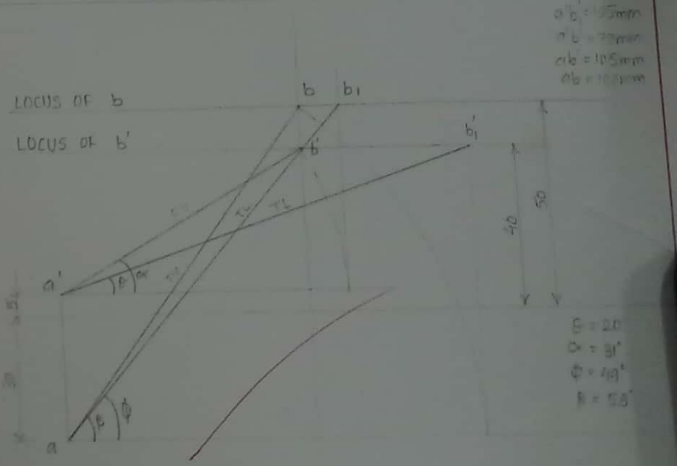
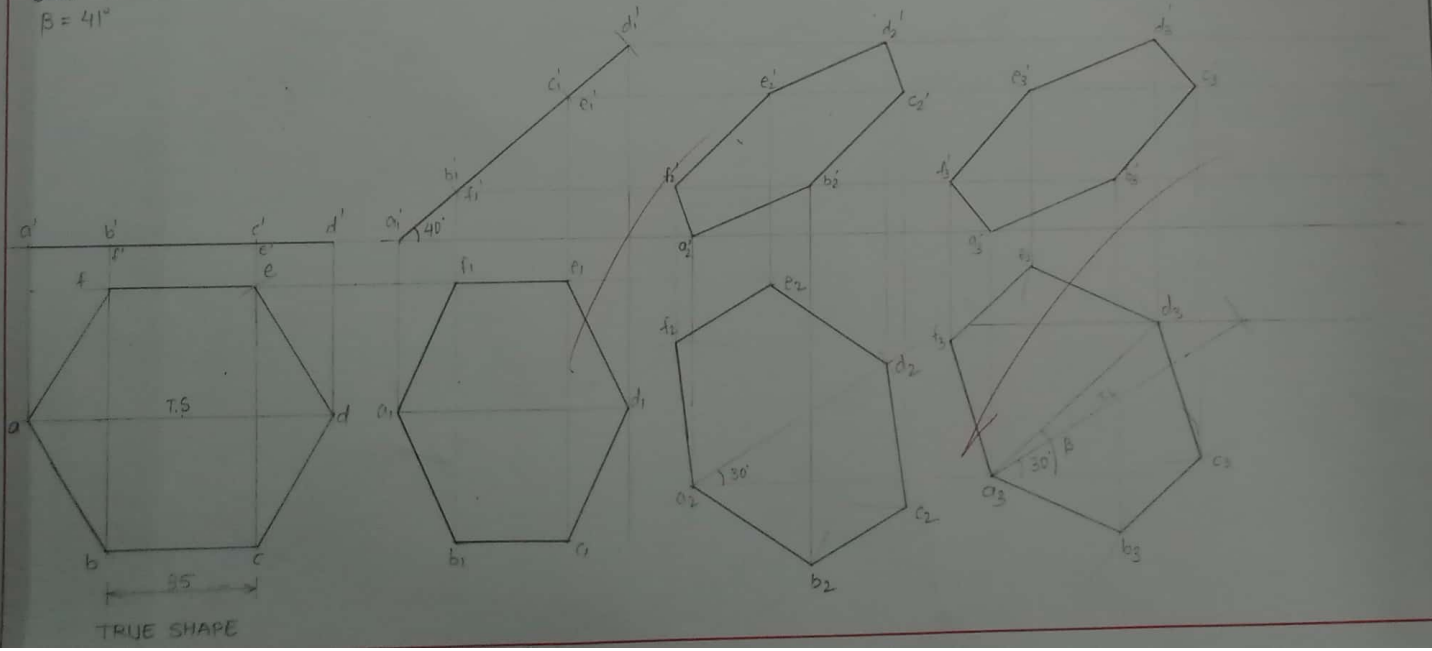


4.

Side - 35 mm
β = 41°



	DATE	SIGN.
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COMP.		

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BRANCH : BTECH IT
ENROLL. No. : 2101202021
SCALE :

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PROJECTION OF LINES AND PLANES

SHEET No. : 04

Engineering Graphics and Design Laboratory / LAB PRACTICE (Mechanical Engineering)

SHEET 05

PROJECTION OF SOLID, SECTION OF SOLID& DEVLOPMENT OF SURFACES

1. A pentagonal prism is resting on one of the corners of its base on the H.P. The longer edge containing that corner is inclined at 45° to the H.P. The axis of the prism makes an angle of 30° to the V.P. Draw the projections of the solid. Take the side of the prism is equals to 20 mm.

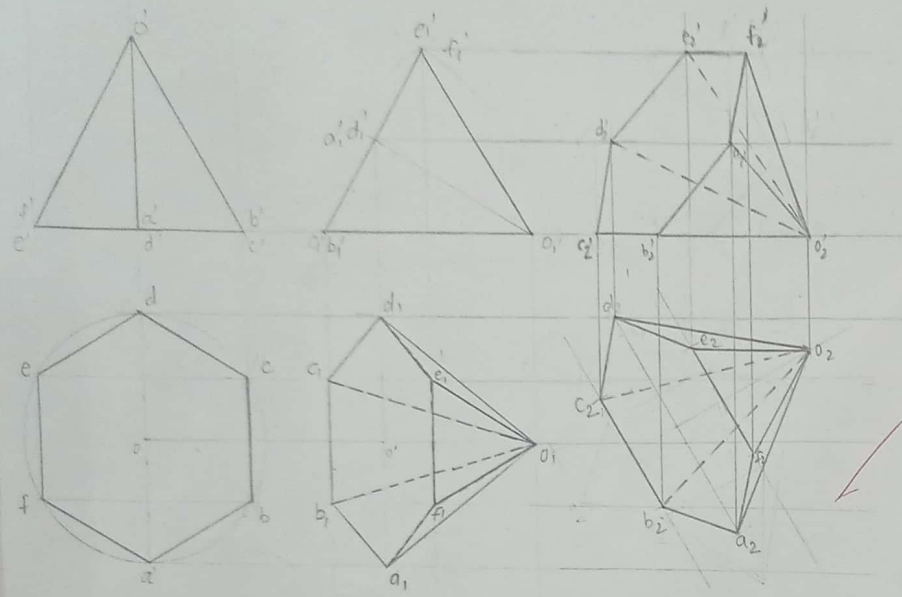
2. A hexagonal pyramid of 30 mm side of base and 45 mm length of axis is resting on one of its triangular faces on HP. Draw the projection of pyramid when its edge of base which is in HP is inclined at 60° to the VP.

3. A Pentagonal pyramid, side of base 40 mm and height 80 mm, is resting H.P. on its base with one of the edges of the base away from V.P. is parallel to V.P. It is cut by an A.I.P. bisecting the axis, the distance of the section plane from the apex being 20 mm. Draw the elevation and sectional plan of the pyramid and draw the true shape of the section. Find the inclination of the section plane with the H.P.

4. A right regular pentagonal pyramid (30 x 60) is resting on H.P. on its base with one of the sides is perpendicular to V.P. AIP cuts the axis at 30 mm from apex and 60^0 inclined to H.P. Draw the development of the cut pyramid.

Prepared By: Alok Dwivedi	Approved By: (HOD: Mechanical Engg.)	Issued By:
Date: 15/04/2022	Date: 15/04/2022	Date: 15/04/2022

2.



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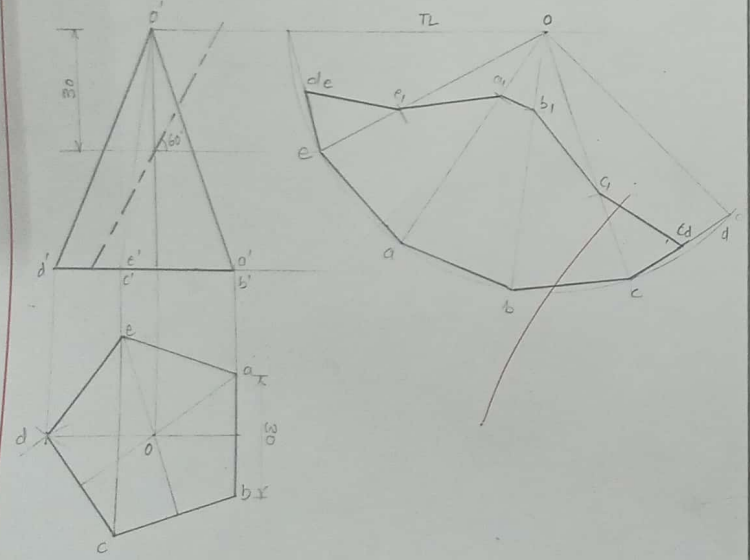

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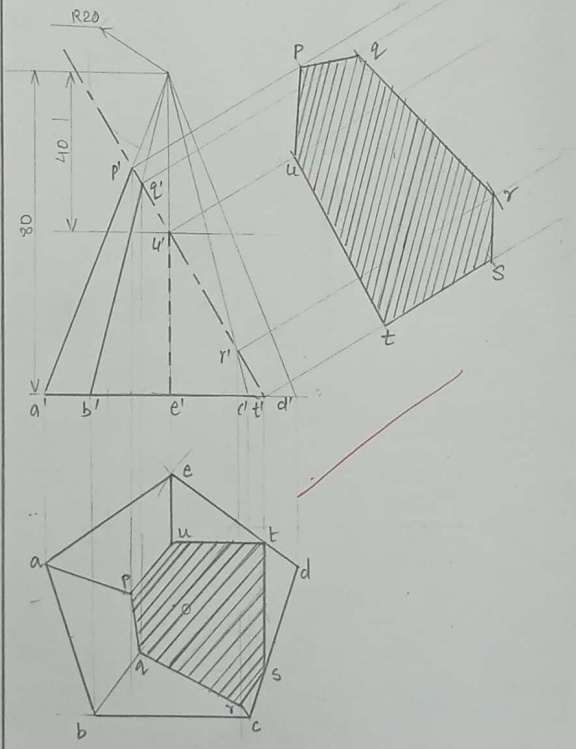

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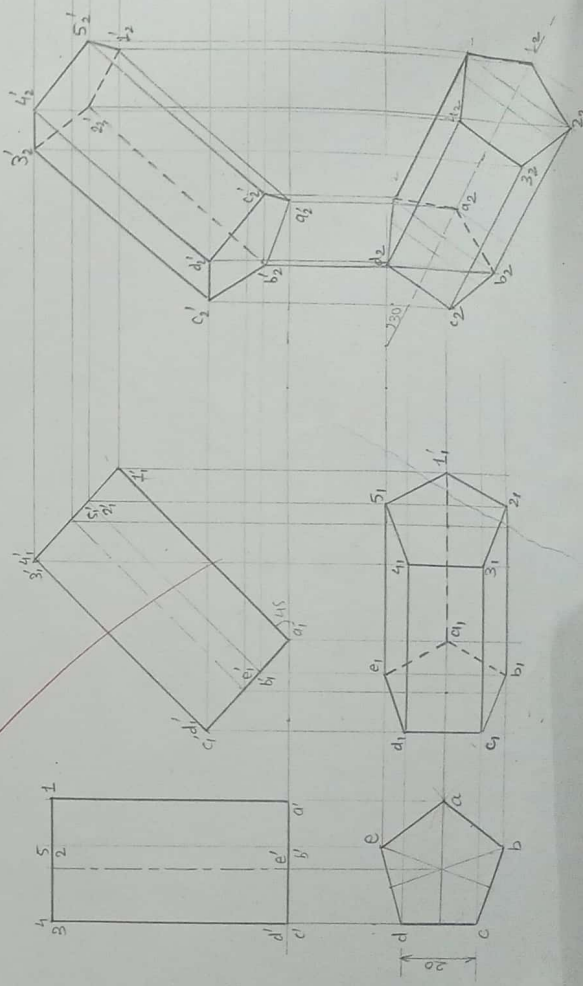

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VARNAMA, VADODARA

NAME : KAMLESH PATEL

PROJECTION OF SOLIDS, SECTION OF SOLIDS & DEVELOPMENT OF SURFACES

SCHOOL : ☑ KSET / ☐ KSDS

BRANCH : BTECH-IT

ENROLL. No. : 2101202021

SCALE :

SHEET No. : 05

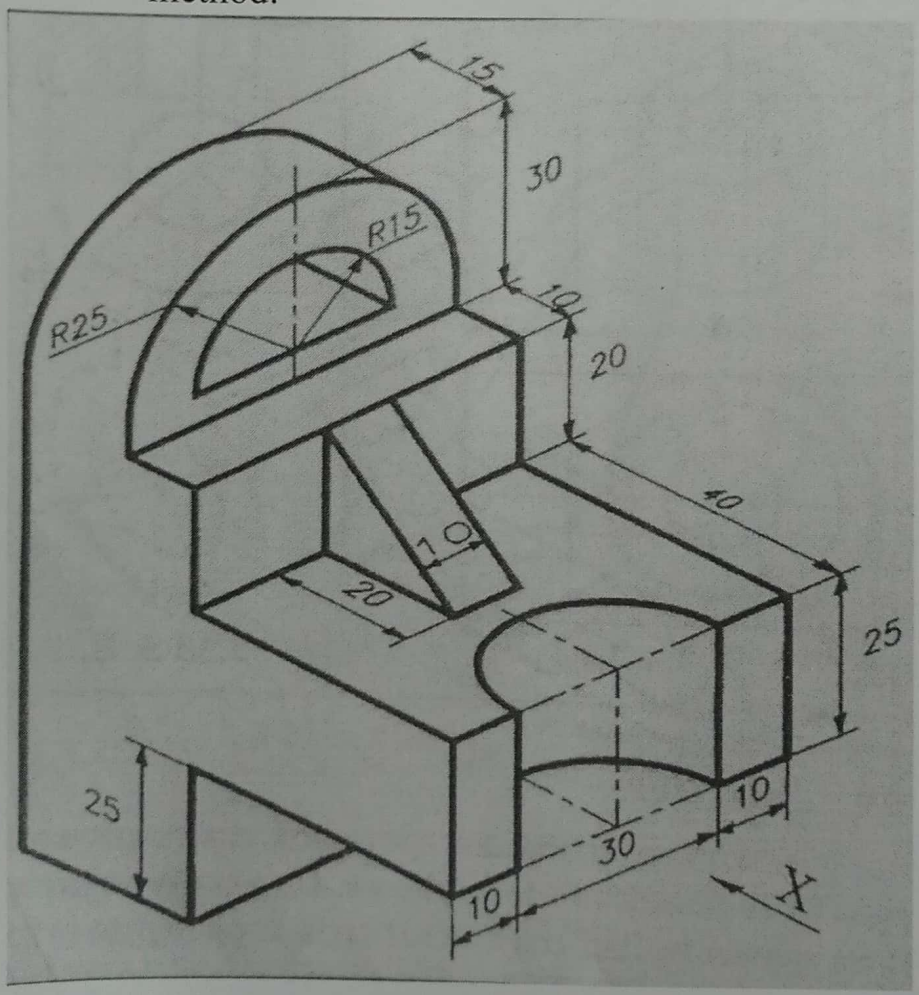
Engineering Graphics and Design Laboratory / LAB PRACTICE (Mechanical Engineering)

SHEET 06

ORTHOGRAPHIC PROJECTION AND ORTHOGRAPHIC VIEWS

1 Draw

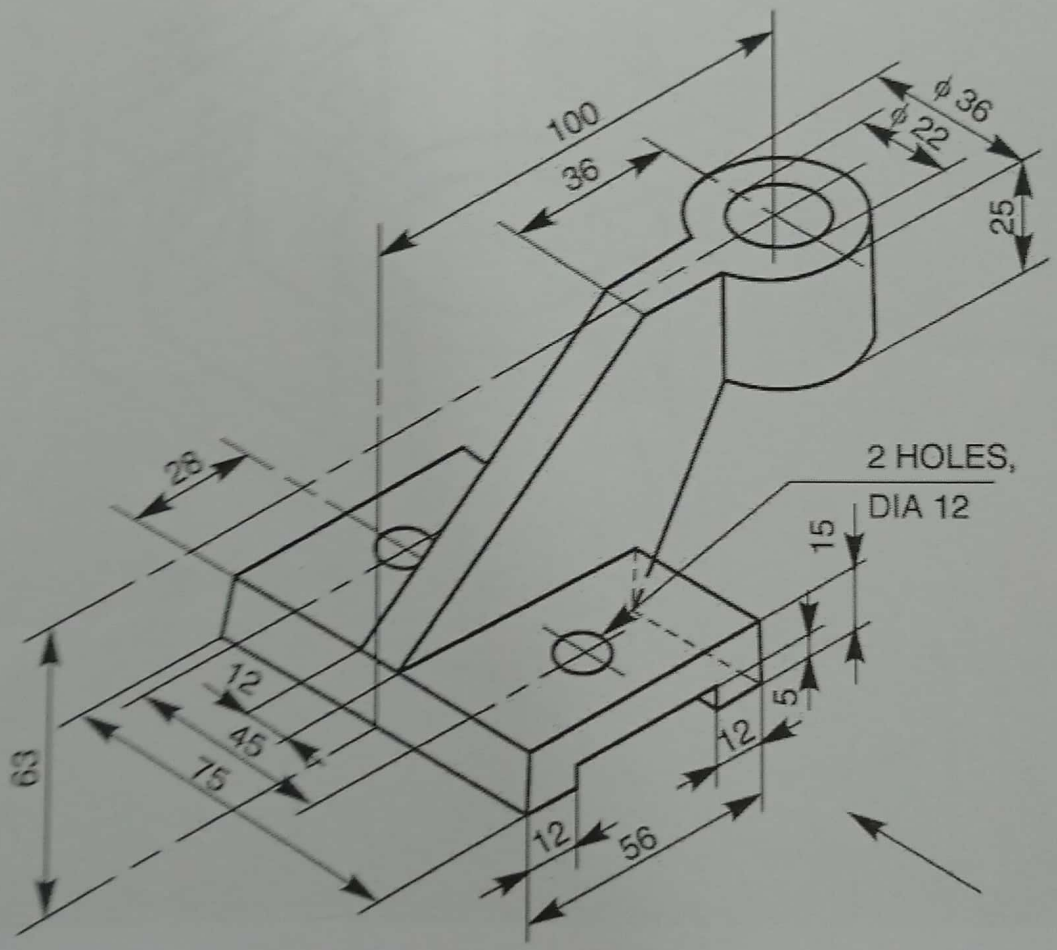
a) Front view
b) Left Hand Side View
c) Top View for the object shown in figure by 1st angle method.



Prepared By: Alok Dwivedi	Approved By: (HOD: Mechanical Engg.)	Issued By:
Date: 15/04/2022	Date: 15/04/2022	Date: 15/04/2022

2 Draw

a) Sectional Front view
b) Left- Hand Side View
c) Right-Hand Side View
d) Top View for the object shown in figure by 3rd angle method

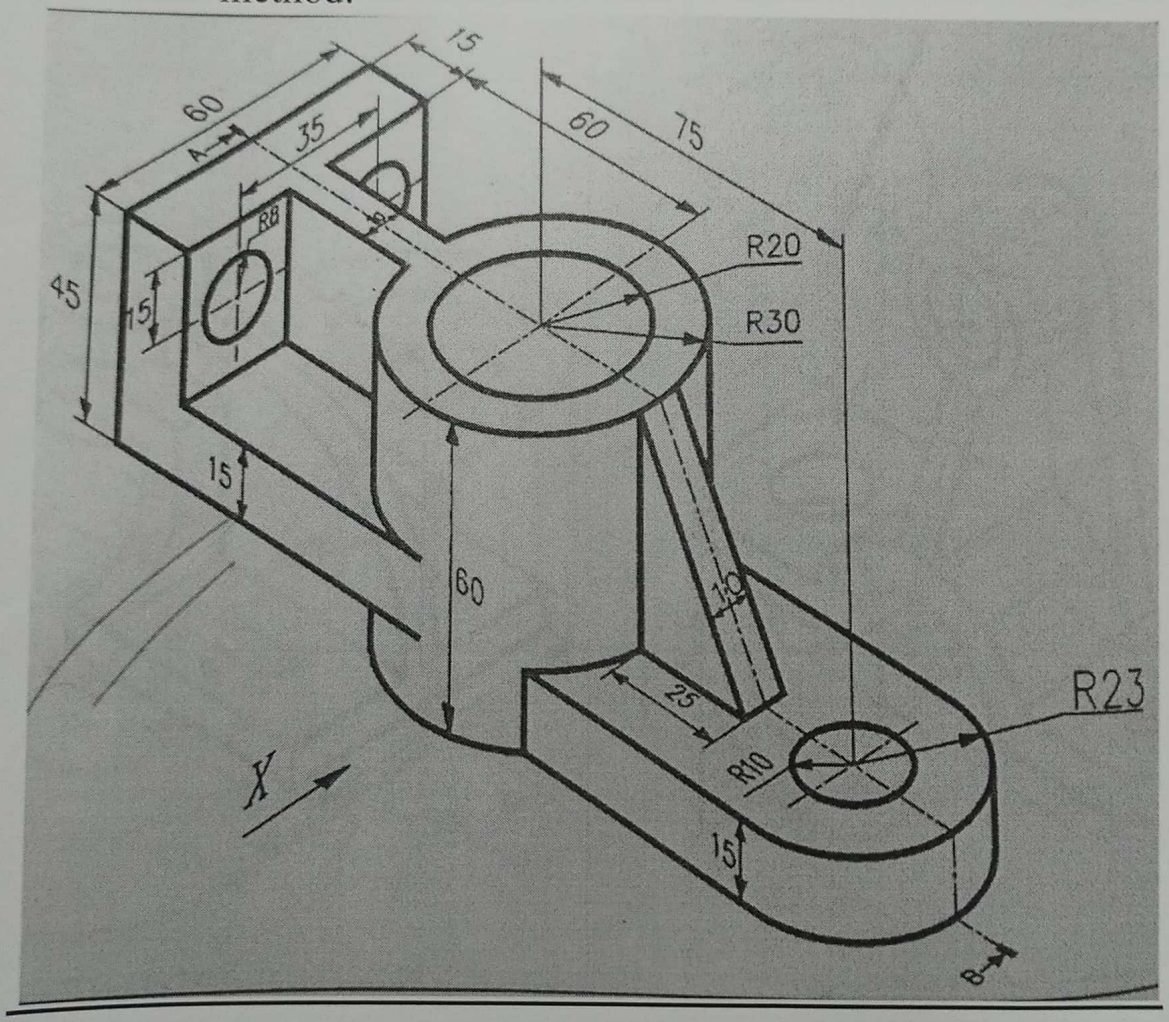


Prepared By: Alok Dwivedi	Approved By: (HOD: Mechanical Engg.)	Issued By:
Date: 15/04/2022	Date: 15/04/2022	Date: 15/04/2022

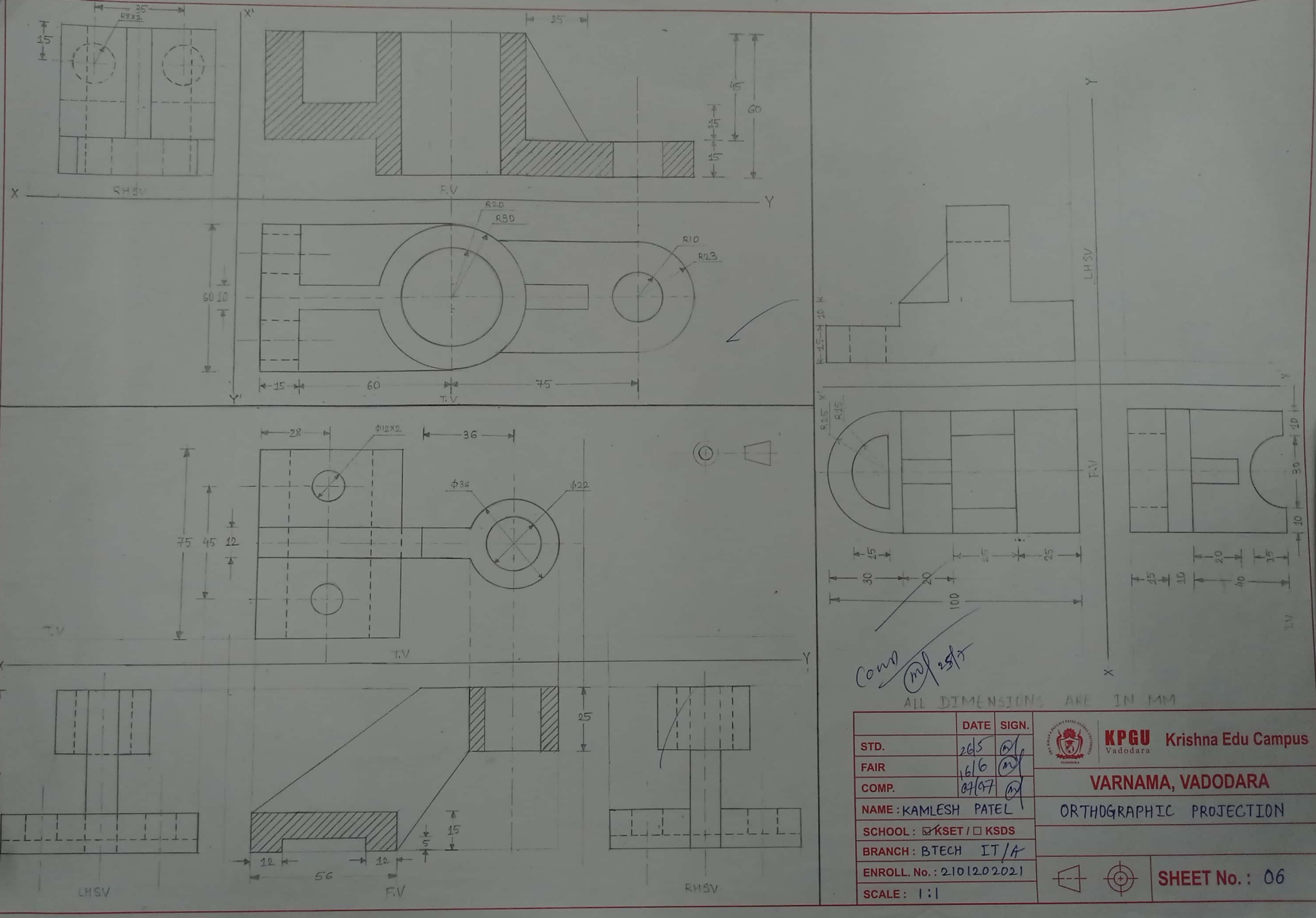
Engineering Graphics and Design Laboratory / **LAB PRACTICE (Mechanical Engineering)**

3 Draw

a) Sectional front view from AA
b) Right Hand Side View
c) Top View for the object shown in figure by 1st angle method.



Prepared By: Alok Dwivedi	Approved By: (HOD: Mechanical Engg.)	Issued By:
Date: 15/04/2022	Date: 15/04/2022	Date: 15/04/2022



	DATE	SIGN.
STD.	26/5	
FAIR	16/6	
COMP.	07/07	

NAME : KAMLESH PATEL

SCHOOL : ☑ KSET / ☐ KSDS

BRANCH : BTECH IT/A

ENROLL. No. : 210120202021

SCALE : 1:1

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ORTHOGRAPHIC PROJECTION

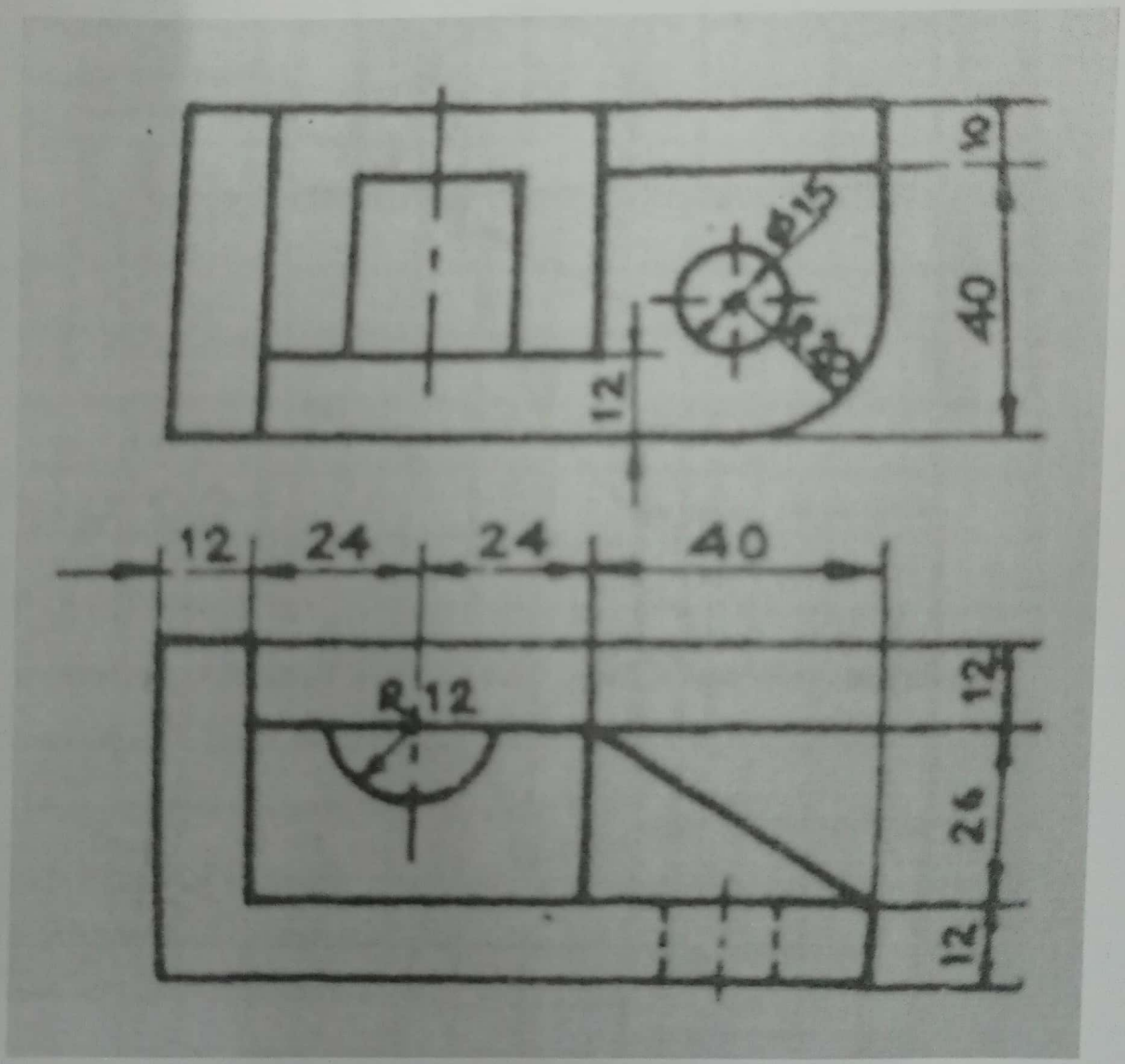
SHEET No. : 06

Engineering Graphics and Design Laboratory
/ LAB PRACTICE (Mechanical Engineering)

SHEET 07

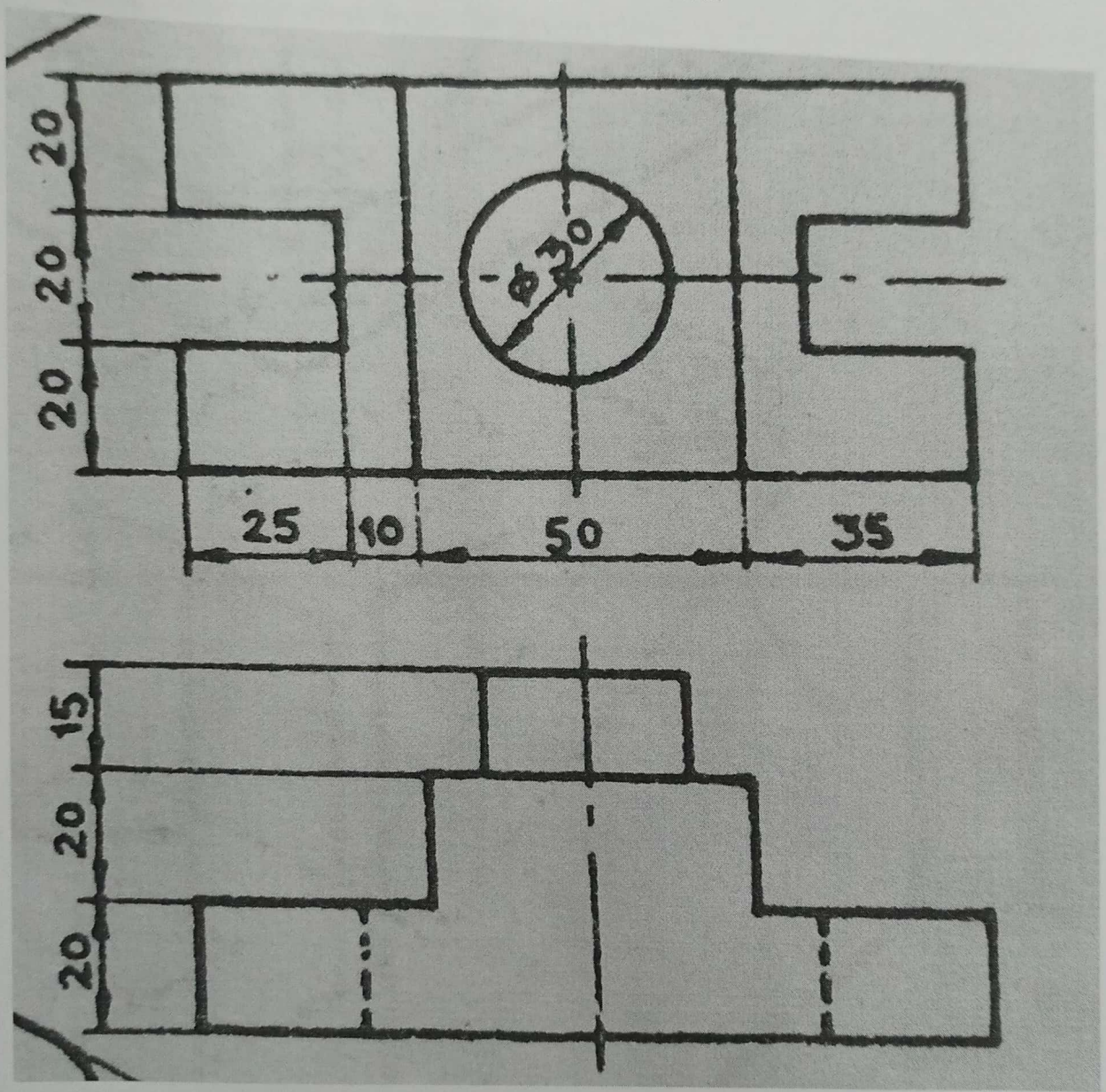
ISOMETRIC PROJECTION AND ISOMETRIC VIEW

1 Draw isometric view from the given views.



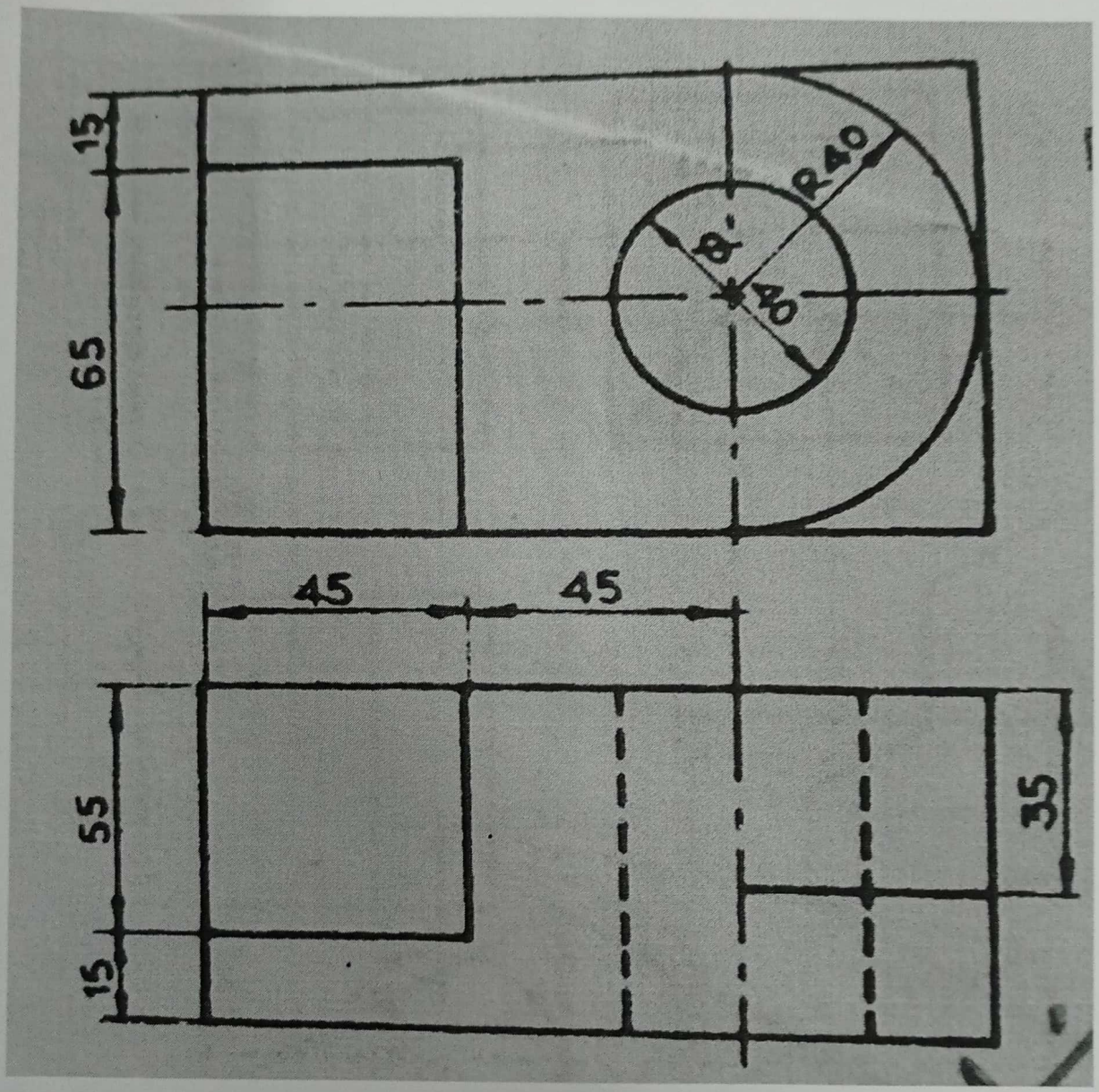
Prepared By: Nilesh A Patel	Approved By: (HOD: Mechanical Engg.)	Issued By:
Date: 18/11/2021	Date: 18/11/2021	Date: 18/11/2021

2 Draw isometric view from the given views.



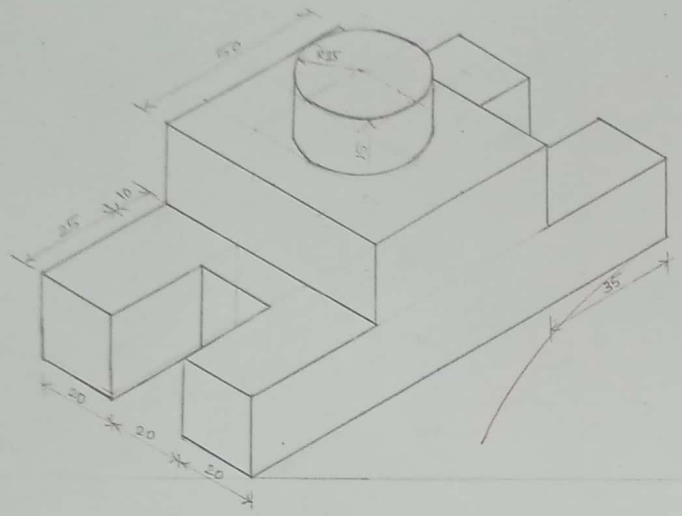
Prepared By: Nilesh A Patel	Approved By: (HOD: Mechanical Engg.)	Issued By:
Date: 18/11/2021	Date: 18/11/2021	Date: 18/11/2021

3 Draw isometric view from the given views.

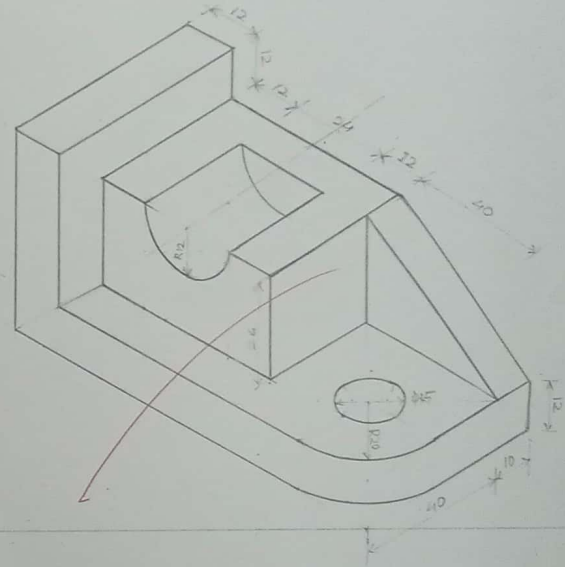


Prepared By: Nilesh A Patel	Approved By: (HOD: Mechanical Engg.)	Issued By:
Date: 18/11/2021	Date: 18/11/2021	Date: 18/11/2021

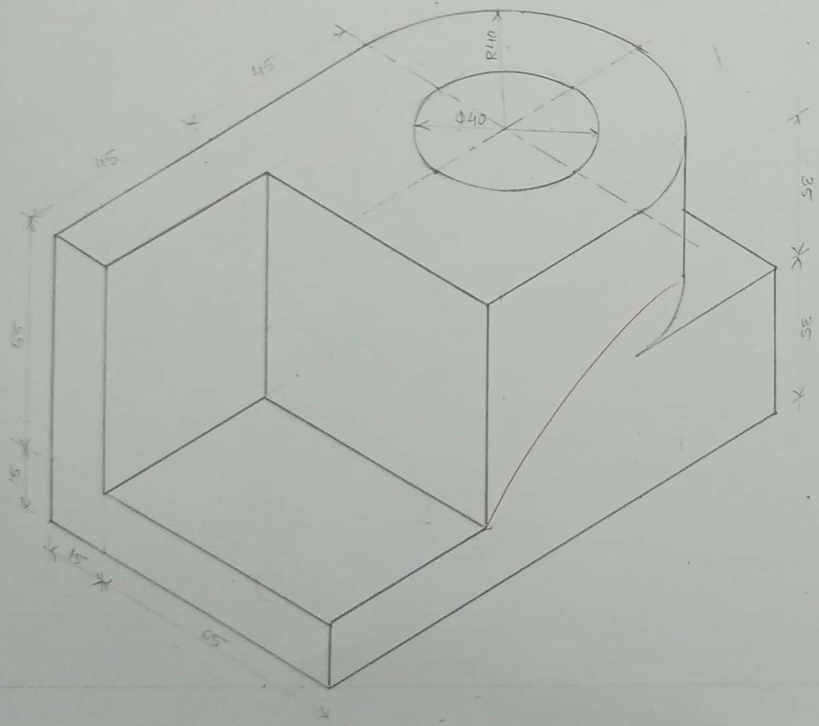
PROBLEM : 2



PROBLEM : 1



PROBLEM : 3



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NAME : KAMLESH PATEL		
SCHOOL : ☒ KSET / ☐ KSDS		
BRANCH : BTECH IT		
ENROLL. No. : 2101202021		
SCALE :		

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VARNAMA, VADODARA

ISOMETRIC PROJECTION AND ISOMETRIC VIEW

SHEET No. : 07

BITS Edu Campus Vadodara

SHEET-08

COMPUTER AIDED DRAWING

1. What do you mean by AutoCAD state its application?

Ans AutoCAD stands for Automatic Computeraided Design. It is a commercial software application used to draft 2D and 3D models with aid of a computer. It was developed by John Walker in 1982 with the help of AUTODESK and maintained it successfully.

Application of AutoCAD

- Architectural drawing of all kinds
- Interior design and facility planning
- Work flow chart and organizational diagram
- Proposals and presentations.
- Graphs of all kind.
- Drawings for electronic, chemical, civil, mechanical, automative and aerospace engineering application
- Company logos
- Greeting cards
- Yacht design

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2. Write down the basic commands for 2D drawing like: line, Circle, Polyline, Rectangle, Hatch, Fillet Chamfer, Trim, Extend, Offset, Dimension style etc.

Ans 1. Line

→ The line command draws a straight line from one point to another. When you pick the start point of the line you need to specify the endpoint of the line segment on screen. You can either continue to specify additional line segment or end the line there. If you want to undo a previous line, enter U at the prompt. To end the command, you can press Enter or ESC, or enter C to close a series of line segment.

2. Circle

→ The Circle command draws a circle based on a radius and center point. The default command requires you to specify a center point and a radius - usually on screen. If you enter CIRCLE or C into the command window, you'll be prompted to pick an option where you can specify the center point or click a highlighted command option.

3. Polyline

→ A polyline is a connected sequence of line or arc segments created as a single object. You can use this command to create open or closed polylines. These polyline can have a constant width or different starting and ending width. Once you have specified the first point of the polyline, you can use the width option to specify the width of all the subsequently created segment

4. Rectangle

→ The rectangle command is used to draw a rectangle with sides that are vertical and horizontal. You can specify the position and size of the rectangle by choosing two diagonal corners. Essentially, a rectangle is a closed polyline that is automatically draw for you by AUTOCAD.

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5. Hatch
A hatch is an object that covers an area with a pattern of lines, dots, shapes, solid fill color, or gradient fill. When you start this command, the ribbon will display the 'hatch creation' tab where you can pick from a variety of hatch pattern.

6. Fillet
Fillet command is used to remove sharp edges of the object. The fillet radius determine the size of the arc created by the FILLET command, which connects two selected objects or the segments in a 2D polyline.

7. Chamfer
chamfer creates a beveled corner.

8. Trim
To trim objects
a. Select the boundaries and press Enter.
b. Then select the object that you want to trim.
c. To use all object as boundaries
d. press Enter at the first Select Objects prompt.

9. Rotate (RO)
Rotates the selected objects about a base point. The angle of rotation can be specified.

10. Erase (E)
Delete the selected objects

11. Copy (CO)
Creates a copy of the selected object. Like the move tool, you must select a base point that is used as a refrence point when the object is pasted in it

12. Dimension (DIM)
Visually indicates the dimensions of the selected object. Indicates length for lines, diameter for circle

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