B.Tech. (Artificial Intelligence & Machine Learning / Artificial Intelligence (AI) and Data Science / Automobile Engineering / Civil Engineering / Data Science / Electrical & Electronics Engineering / Electrical Engineering / ECE / IT / Mechanical Engineering)

B.Tech. (CSE) / (CSE) (Artificial Intelligence & Machine Learning / IOT / Internet of Things and Cyber Security including Block Chain Technology)   (Sem.–1)

ENGINEERING GRAPHICS & DESIGN

Subject Code : BTME-101-21

M.Code : 91335
Date of Examination : 12-02-22

Time : 2 Hrs.   **Max. Marks : 60**

INSTRUCTIONS TO CANDIDATES :

1.   **Attempt any FIVE question(s), each question carries 12 marks.**

1.   Draw a scale of 1:50 or of R.F 1/50 to read meters and decimeters and long enough to measure up to 6m. Show 5.7m and 4m 5dm on the scale.

2.   Line "AB" 65mm long; has its end "A" both in HP and VP. It is inclined at 45° to the "HP" and 30° to the "VP". Draw its projections when the line is lying in third quadrant.

3.   A regular hexagonal thin plate of 45mm side has a central circular hole of 45mm diameter at its center. It is resting on one of its corners in HP. Draw its projections when the plate surface is vertical and inclined to VP at 30°.

4.   A right regular triangular prism of base edge 40mm, axis 65mm long is resting on its rectangular face on HP, with axis parallel to both HP and VP. Draw its projections.

5.   A right regular hexagonal prism, edge of base 20mm, and height 50 mm has a central circular hole of diameter 20 mm drilled centrally through it, along its axis. Draw its isometric view.

6.   Explain with the help of an example the Aligned and Unidirectional system of placement of dimensions.

7.   A circular lamina of diameter 49mm is inclined to VP at 42° and perpendicular to HP and it is resting on VP on a point of its circumference. Draw its projections. Also show traces.

8.   Point C is 43mm below HP and 55mm behind VP. Draw its projections and find its shortest distance from XY line.

Note: Any student found attempting answer sheet from any other person(s), using incriminating material or involved in any wrong activity reported by evaluator shall be treated under UMC provisions.

Student found sharing the question paper(s)/answer sheet on digital media or with any other person or any organization/institution shall also be treated under UMC.

Any student found making any change/addition/modification in contents of scanned copy of answer sheet and original answer sheet, shall be covered under UMC provisions.

Date of Examination → 12-Feb-2022

Roll no. → 2101892   M. Code → 91335

Subject name → Engineering Graphics & Design

Subject code → BTME 101-21   Semester → 1st

Course → B. Tech   Branch → CSE

Declaration of Student

1 → I ___Udit___ s/o ___Satpal___ hereby declare that the while attempting my answer sheet will not use any person(s), incriminating material or involve in any wrong activity. If such reported by evaluator, then my case should be treated as UMC.

2 → If I found sharing the question paper(s) / Answer sheet on digital med media or with any other person, any organization / institute then my case should be treated as UMC.

3 → If any change / addition / modification have been found in my original answer sheet from scanned copy of answer sheet then my original answer sheet should also be covered under UMC.

<div align="right">

Udit

signature of Student

</div>

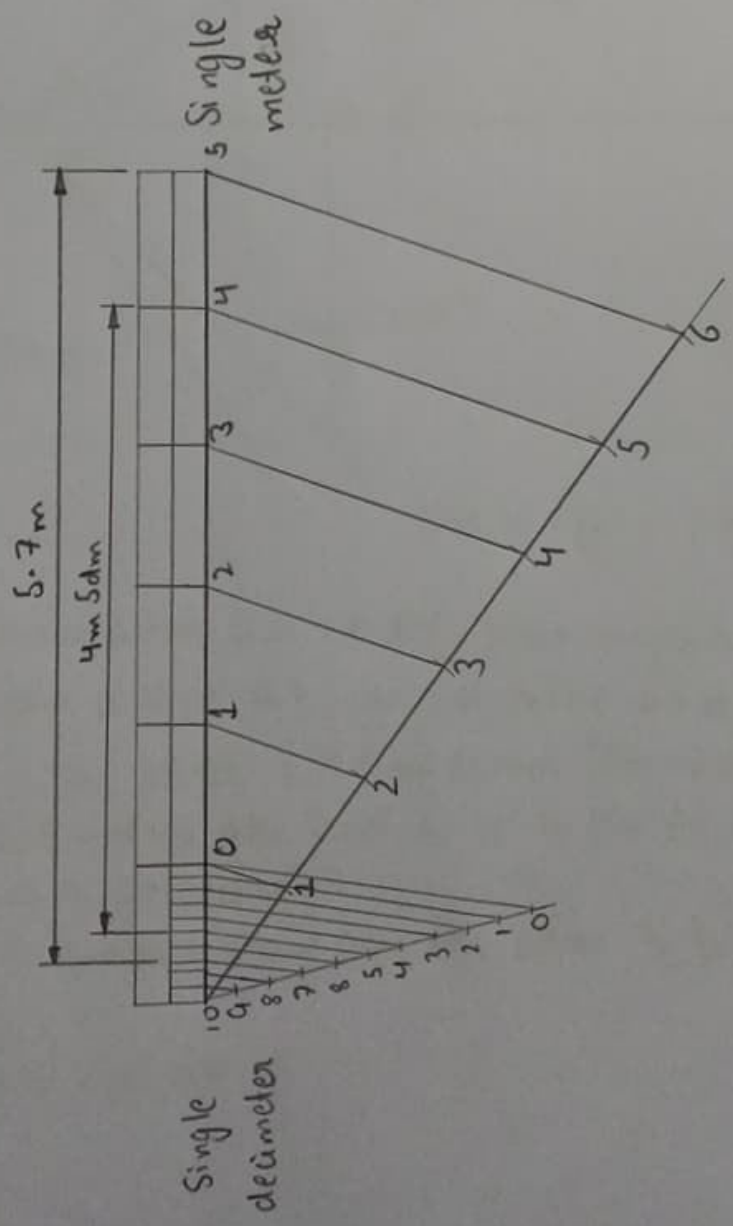I hereby also declare that above mentioned is true and correct to the best of my knowledge.
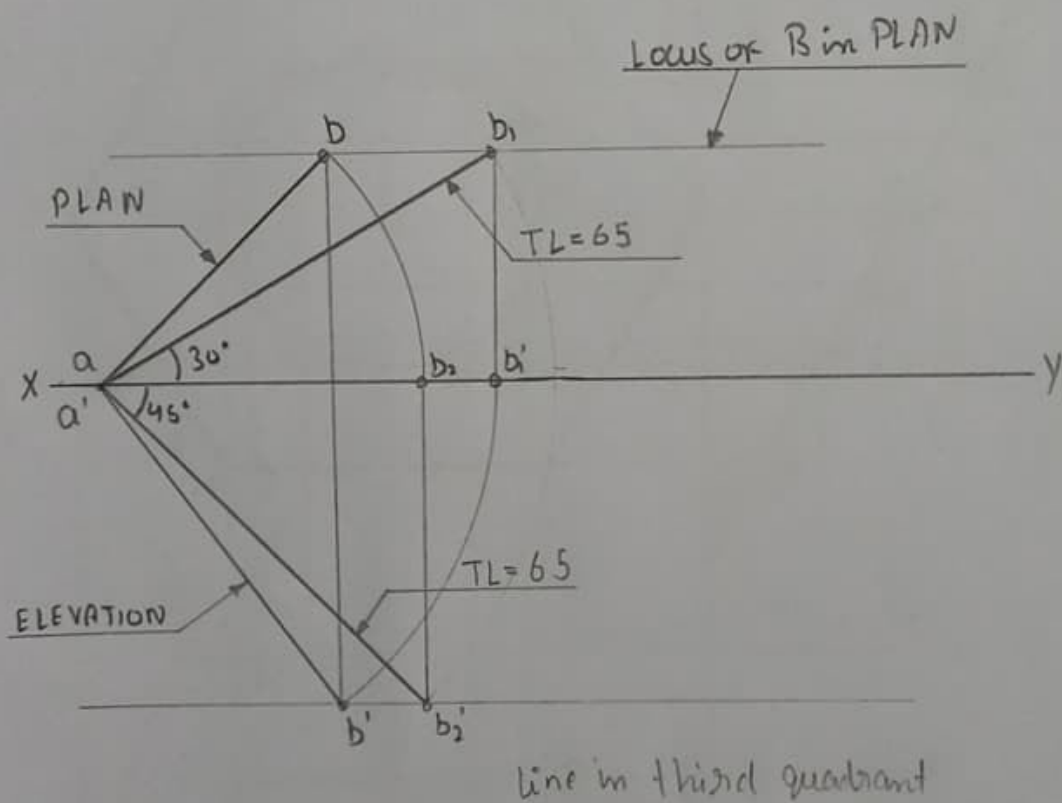
<div align="right">

Udit

Signature of Student

</div>

R.o.f. $= \frac{1}{50}$ Length of Scale [LOS] = R.f. × max. length

$$= \frac{1}{50} \times 6 \times 100$$

$$= 12 \, cm$$

Single meter

5.7 m

4m 5dm

Single decimeter

Q2

Locus of B in PLAN

PLAN

TL=65

X ——— a / 30° ——— b₂ b' ——— Y

a' / 45°

TL=65

ELEVATION

b'   b₂'

line in third quadrant

Steps→ i) Draw a base line i.e. XY. True length is given as 65mm. So, draw a line ab₁ at 30° to the XY of 65mm.

ii) Draw a'b₂' at 45° to XY of 65mm (downward side).

iii) Extend the end of ab₁ and a₂'b₂' to the XY line, we get the points b₁' and b₂ respectively.

iv) Using the compass draw an arc from b₂ to locus of B. Similarly, on the b₁'

v) Join ab and ab'

Q3→
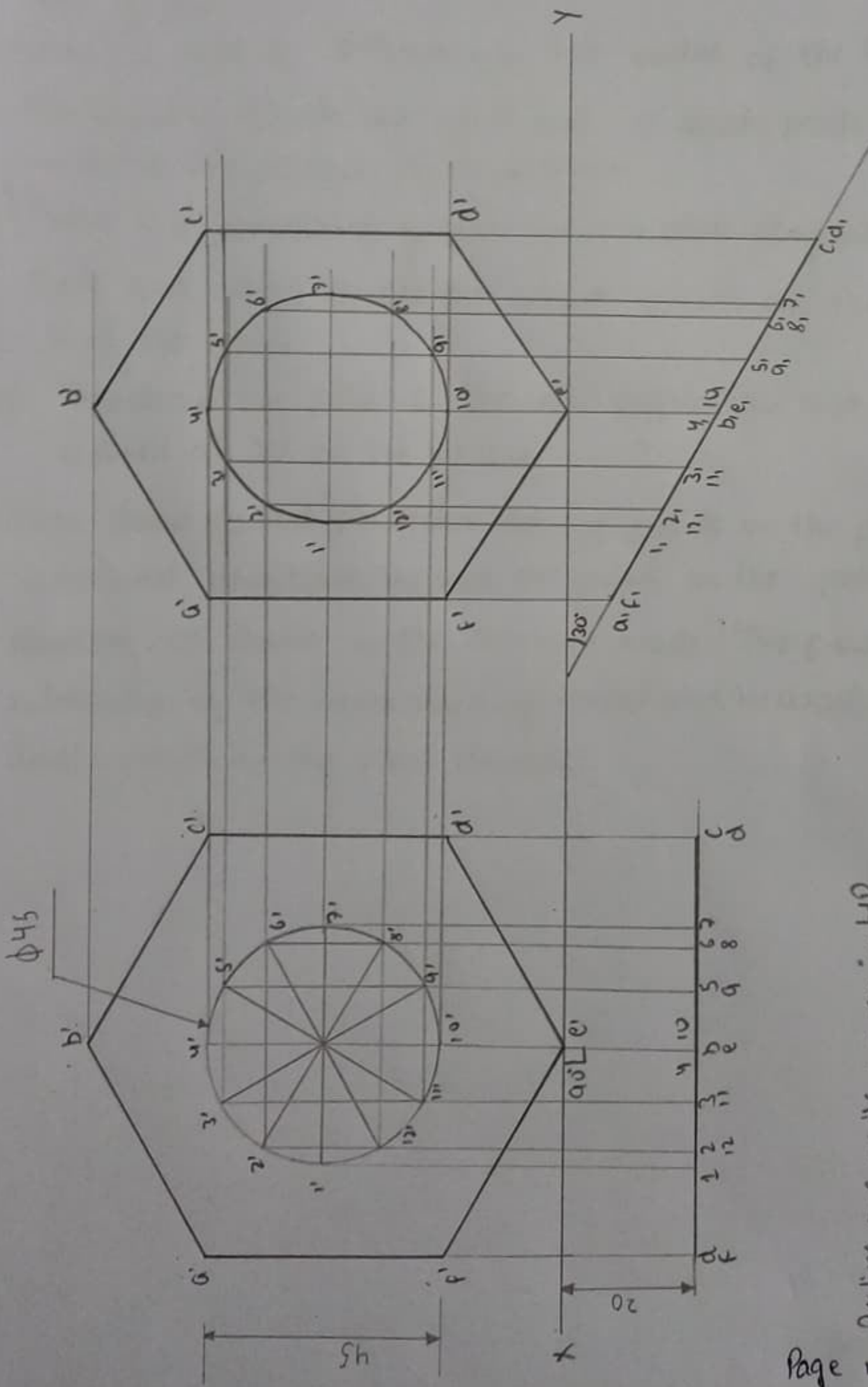
Resting one of its corners in HP.

Vertical and inclined to VP at 30°

Steps of construction →

i) Draw elevation a'b'c'd'e'f' keeping one corner ~~core~~ in HP. i.e. e' on the XY line.

ii) Draw a hole of φ45mm. in the centre of the hexagon in the elevation. Divide the circle into 12 equal parts and number the division points as shown.

iii) Draw the corresponding plan for the plate along with the hole and name of all the corner points on the hexagon and the circle

iv) Then draw the plan in the new position so that it is inclined at 30° to the XY line.

v) Then draw vertical projectors through points on the plan and horizontal projectors through the points on the previous elevation. as shown in the diagram made. The points of intersection of the corresponding vertical and horizontal projectors locate points on the final elevation

Q.6

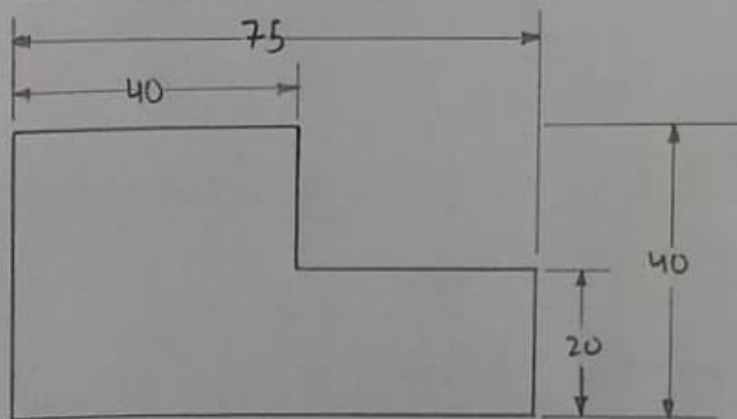## Aligned system of placement of dimensions →
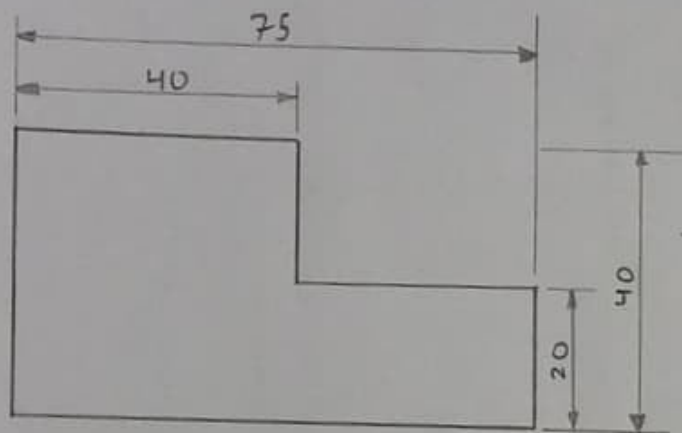
→ Aligned system of dimensioning

- In this type of dimensioning system, Dimensions are placed above the dimension lines which are drawn without any break and written ~~without~~ parallel to them.
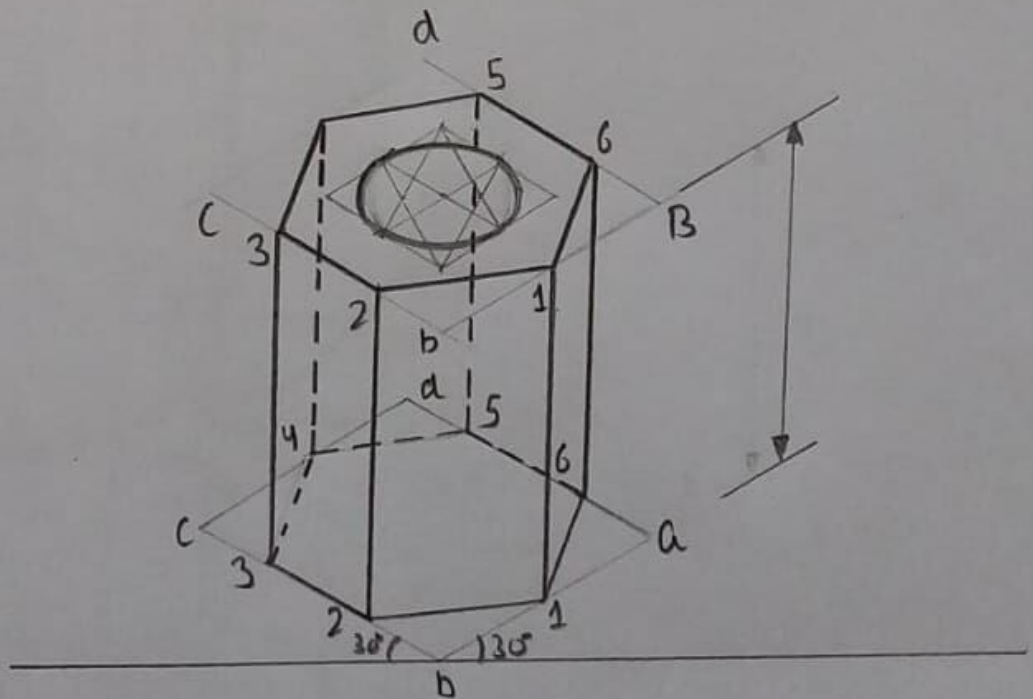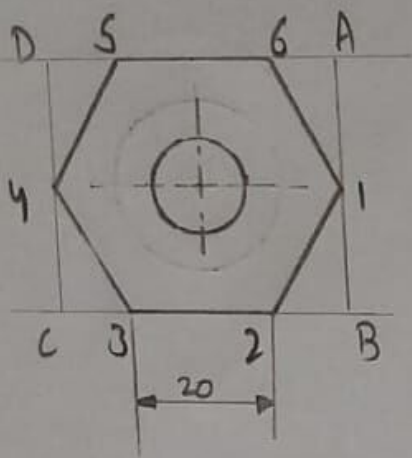
  That may be read from the bottom or any other side of the drawing sheet. Dimensions are placed in the middle and top of the dimensioning line.

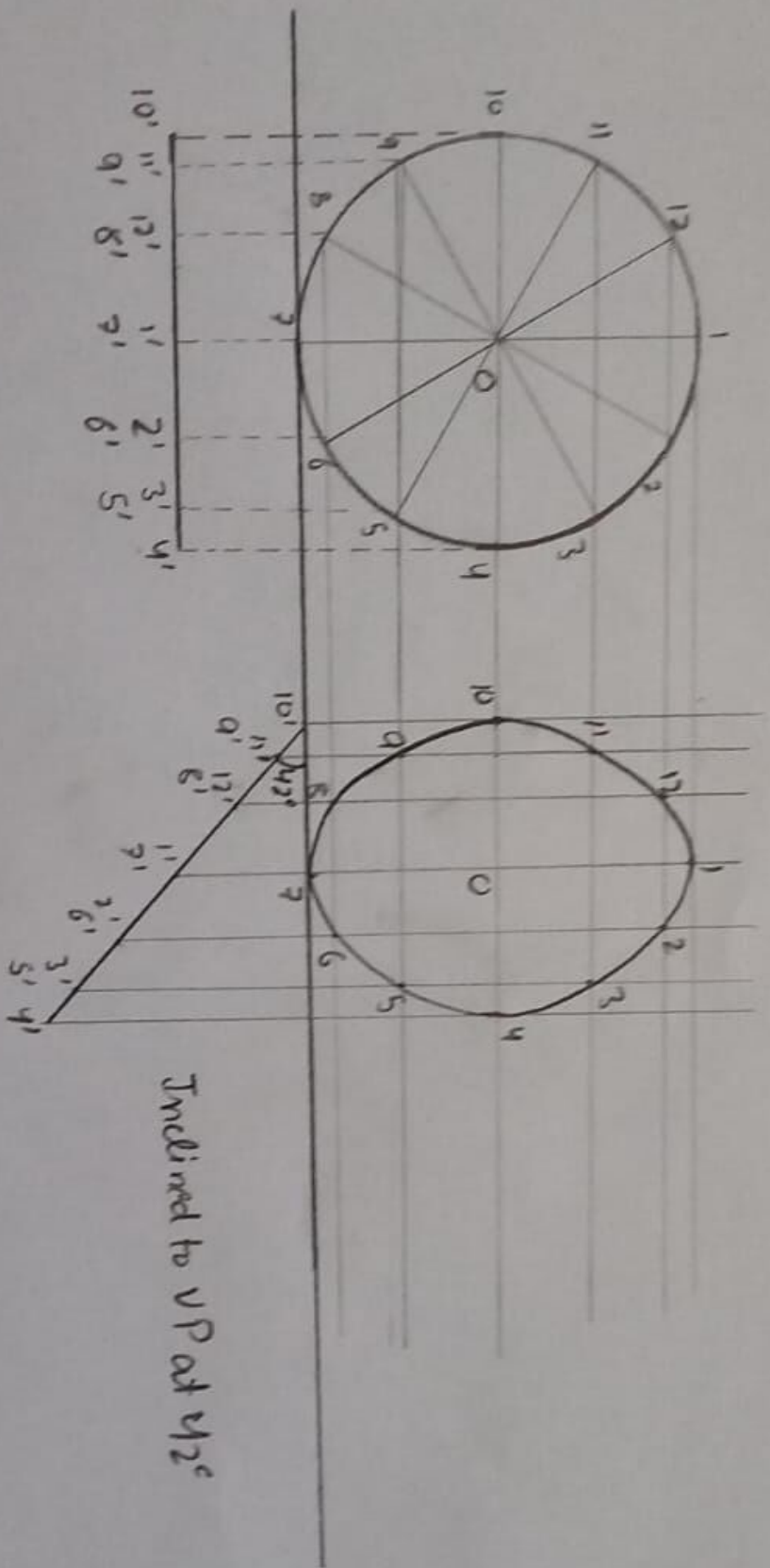## Unidirectional System of placement of dimensions →

→ Unidirectional system of dimensioning

- In this type of dimensioning system, dimensions are placed in such a way that they can be read from the bottom edge of drawing sheet. Dimensions are inserted by breaking the dimension line at the middle

Q8

X' ← top vertical axis

C · · · · · · · · · · · C''

M.P.

X ————O————A————— Y

90°

V.P.

c'

Y'

Shortest distance ⇒ $OC' = \sqrt{(OA)^2 + (AC)^2}$

$$OC'' = \sqrt{(43)^3 + (55)^2}$$

$$\Rightarrow OC'' = 69.8\,mm$$

$$\Rightarrow OC'' \approx 70\,mm \text{ approx}$$

D   5   6   A

4   1

C   3   2   B

|← 20 →|

Isometric View

d

5

6

C 3

B

2

1

b

a   5

4

6

C

a

3

2   1

30°   130°

b

Isometric View

Inclined to VP at 42°

Q4

40

65mm

x a'b'

c'

1'2' a''

3'

c''

30°

b''

y

a

b

c

2

3

1