g) What are right solids and oblique solids? Explain with a suitable freehand drawing.

h) Show by means of traces, a plane perpendicular to both HP and VP.

i) Write the following statement using single stroke capital vertical letters of 12 mm size : "IKGPTU KAPURTHALA".

j) Differentiate Isometric Projections and Isometric Drawing.

## SECTION-B

2) Construct a Diagonal Scale of R.F = 1:50 to read meters, decimeters and centimeters and long enough to measure up to 6m. Indicate 3.46m on the scale.

3) A point "G" is 22mm in front of VP and 42mm above HP. Draw its projections and find out its shortest distance from the reference line.

4) A line AB has its end "A" 15 mm above HP and 20 mm in front of VP. End "B" 40 mm above HP and 50 mm in front of VP. The distance between the end projectors is 45 mm. Draw the projections of the line and find out its true length, true inclinations with principal planes, HT and VT.

5) 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.

## SECTION-C

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

7) A regular hexagonal thin plate of 45 mm side is resting on one of its corners in HP. Draw its projections when the plate surface is vertical and inclined to VP at 30°.

8) Draw the projections of a cone of base diameter 42 mm and axis 62 mm; lying on HP on its generator such that the axis is parallel to VP. Assume the cone lying in first quadrant.

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

**NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.**



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Total No. of Questions : 09

Total No. of Pages : 02

B.Tech. (Agriculture Engineering/Artificial Intelligence & Machine Learning/Artificial Intelligence (AI) and Data Science/Artificial Intelligence/Automation & Robotics/Automobile Engineering/Civil Engineering/Computer Science Engg./Data Science/ Electrical & Electronics Engineering/ Electrical Engineering/ Electronics & Communication Engineering/ Electronics & Electrical Engineering/ Food Technology/ Information Technology/ Mechanical Engineering/ CSE (Internet of Things and Cyber Security including Block Chain Technology)/B.Tech. (Computer Science & Engineering/Artificial Intelligence & Machine Learning/Cyber Security Data Science/IOT)

(Sem.–1,2)

# ENGINEERING GRAPHICS & DESIGN

Subject Code : BTME-101-21

M.Code : 91335

Date of Examination : 19-07-22

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION - B & C have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying EIGHT marks each.
4. Select atleast TWO questions from SECTION - B & C.

## SECTION-A

1) **Write short notes on :**

a) Explain the following terms with a suitable drawing: Apex, Slant Height, Base Rim and Generator.

b) Draw a regular Pentagonal Lamina of side 55mm.

c) Explain with the help of an example the Aligned system of placement of dimensions.

d) What do you mean by Representative Fraction (RF)?

e) Explain any Two Lines used in Engineering Drawing.

f) How will you represent Metals and Liquid on a drawing sheet?



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## Section B

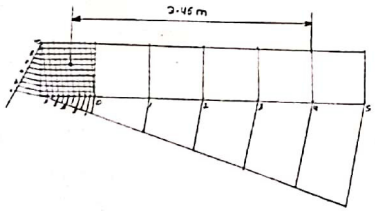
**Question 2**

RF = 1:50 , Diagonal scale of 6m

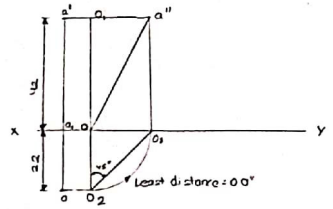
Less: RF x max length to be measured

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

$= 12\,cm$

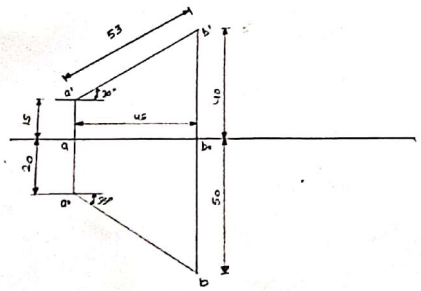



**Question 3**




Shortest distance = 48

**Question 4**

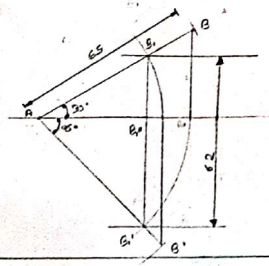


True length = 53mm HT =

Inclination with HP = 30° VT =

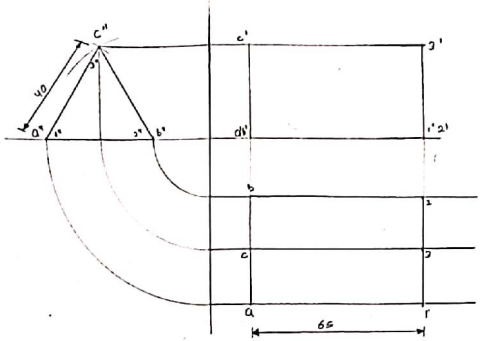
Inclination with VP = 35°

**Question 5**

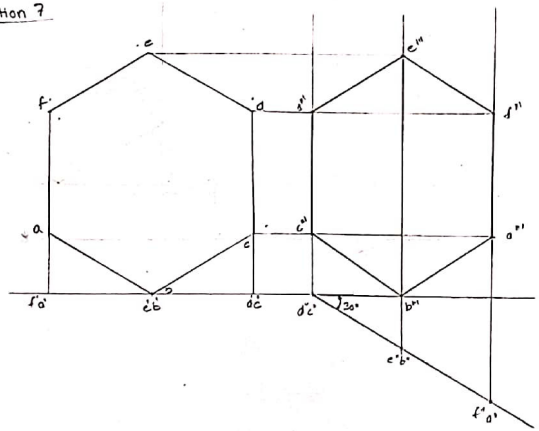


## Section C

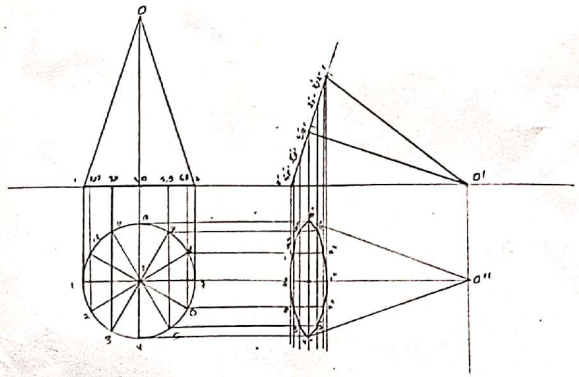
**Question 6**



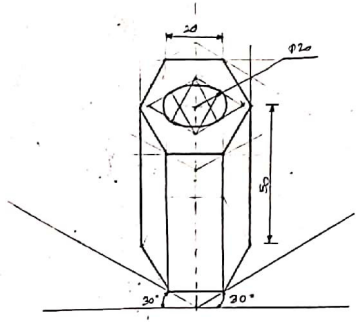

**Question 7**



**Question 8**



**Question 9**




## Section A

**Question 1**

a) Apex: The point where face of triangles meet.

Slant height: The line joining the base corner and apex is slant height.

Base Rim: Flat circular face

Generator: The imaginary line drawn along surface of curved solid which is rotated around axis of solid.

b.

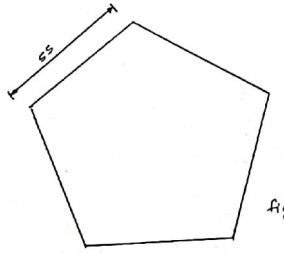



fig: Pentagonal lamina

c)

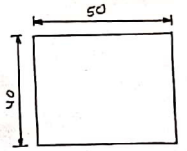



fig: Aligned system of dimensioning.

d) Representative fraction is the ratio of line drawn to the actual length of line

$RF = \frac{\text{length of line drawn}}{\text{actual length of line}}$

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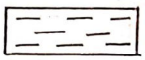
e) Two lines used in Engineering Drawing.

i Continuous thick : Visible outline and edges

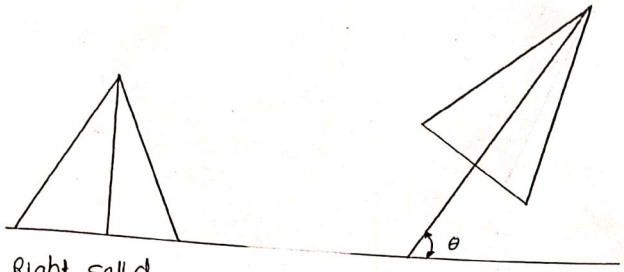
ii Continuous thin : Dimension lines, Extension lines,

f) Metal is represented as

Liquid is represented as 

g)

Q2




Right solid

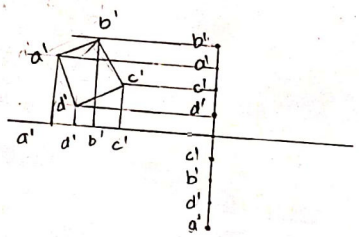
Axis perpendicular to XY plane.

Oblique solid

Axis Inclined to XY plane

h)

plane perpendicular to both Hp and Vp




i)

IKGPTU KAPURTHALA

j)

Isometric projection:

The length/dimension is taken 0.8 times true length.

Isometric drawing.

The length of drawing is done using true length.

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## Section B

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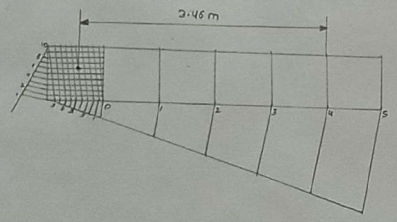
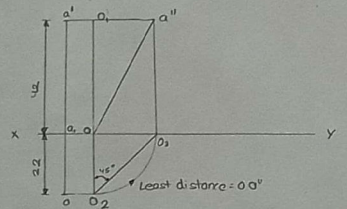
Los = RF × max length to be measured.

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

$= 12\,cm$




**Question 3**

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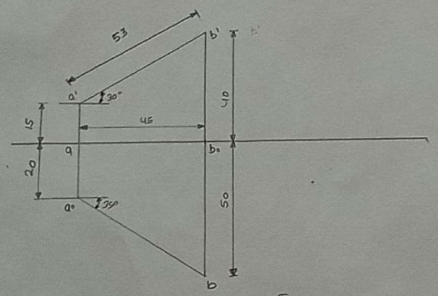


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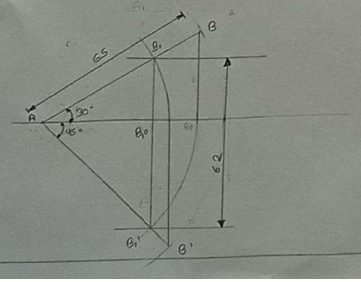
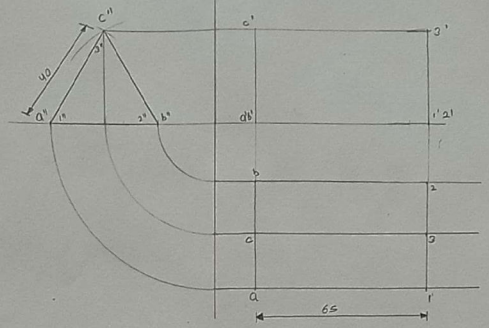



## Section C

**Question 6**

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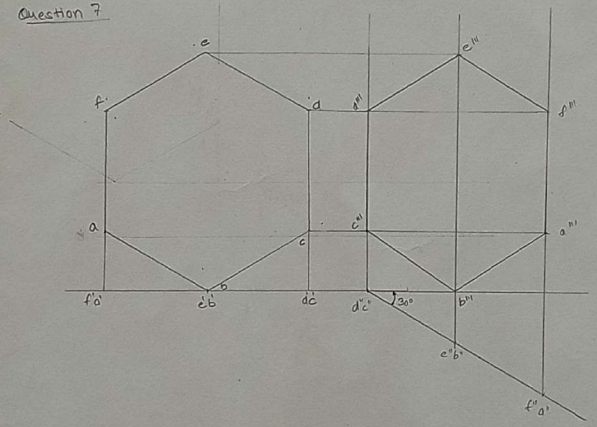


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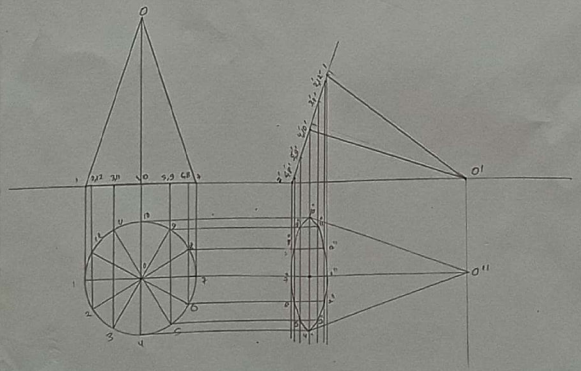


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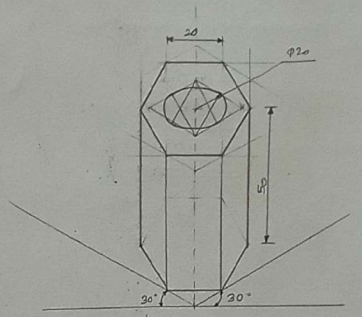


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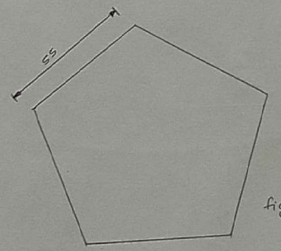
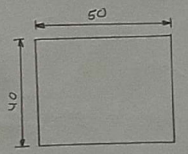



fig: Pentagonal lamina

c)

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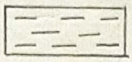
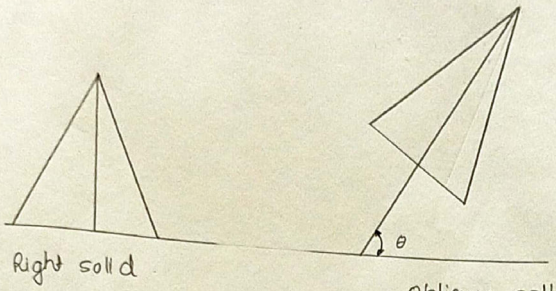
Liquid is represented as 

g)



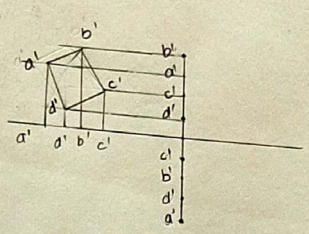

Right solid

Axis perpendicular to XY plane.

Oblique solid

Axis inclined to XY plane

h) plane perpendicular to both Hp and Vp




i)

IKGPTU KAPURTHALA

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Isometric projection:

The length/dimension is taken 0.8 times true length.

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