

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

**B.Tech.(AI & DS/ AI&ML/ Block Chain / CE /
CSE/CS/CSD/EE/ECE/ETE/FT/IT/ME/Robotics & Artificial
Intelligence/Internet of Things and Cyber Security including Block Chain
Technology) (Sem.-1,2)**

ENGINEERING GRAPHICS & DESIGN

Subject Code : BTME101/21

M.Code : 93799

Date of Examination : 28-05-2024

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 :
- Explain right and oblique solids with a free hand drawing.
 - What are isometric lines and non-isometric lines?
 - How will you represent Metal and Concrete on a drawing sheet?
 - Write the following statement using single stroke capital vertical letters of 12 mm size: "YOU ONLY LIVE ONCE, BUT IF YOU DO IT RIGHT, ONCE IS ENOUGH".
 - Define engineering drawing. Why it is called universal language of engineers?
 - What is the difference between first angle and third angle projection? Which angle projection is recommended by B.I.S. now a days?
 - Explain the methods of placement of Dimensions with a suitable freehand drawing.
 - Show by means of traces, a plane perpendicular to HP and inclined to VP.
 - Draw projections of a line lying on VP and inclined to HP with the help of a suitable free hand drawing. Also show traces.
 - Explain Frustum and Truncated Solids with a suitable freehand drawing.

SECTION-B

2. A point "W" is 53mm in front of VP and 78mm above HP. Draw its projections and find out its shortest distance from the reference line.
3. A line "AB", 65mm long has its end "A" 20mm above HP and 25mm in front of VP. The end "B" is 40mm above HP and 65mm in front of VP. Draw the projections of "AB" and shows its inclination with the reference planes.
4. The end "P" of a straight-line "PQ" is 20 mm above the HP and 30 mm in front of VP. The end "Q" is 15 mm below the HP and 45mm behind the VP. If the end projectors are 50 mm apart. Draw the projection of "PQ" and determine the true length, traces and inclination with the reference planes.
5. Distance between two railway stations is 600km, which is represented on a railway map by a line 15cm long. Construct a Diagonal Scale to read up to single km and indicate a distance of 346km on the scale.

SECTION-C

6. A pentagonal Prism having a base with a 30 mm side and 60mm long axis, is resting on one of its rectangular faces on the HP with axis parallel to HP and VP. Draw its projections.
7. A Hexagonal plane with a 30mm side has its surface parallel to and 20mm in front of VP. Draw its Projections, when a side is inclined at 45° to HP.
8. A cube of 30 mm edge is place centrally on top of a cylindrical block of diameter 52 mm and 20 mm height. Draw its isometric projection.
9. Draw isometric view of the cone placed on hexagonal prism with the following orthographic projections:

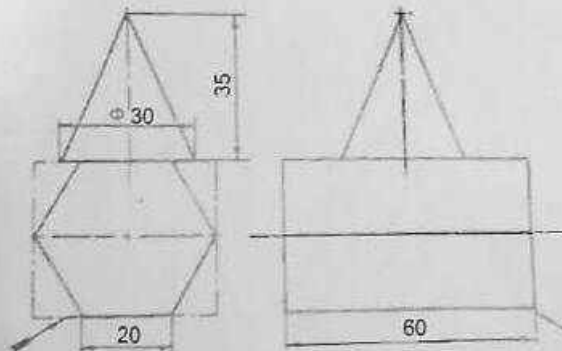


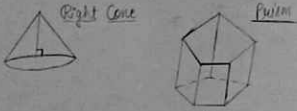
Fig.1

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.

SECTION-A

1) Right Solid: A solid is said to be a right solid if its axis is perpendicular to its base or its end faces.

Oblique Solid: If the axis of a solid is inclined at angle other than 90° to its base or end faces, it is called an oblique solid.



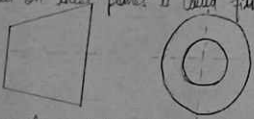
2) Isometric lines: The lines which are parallel to isometric axes are called isometric lines.

Non-Isometric lines: The lines which are not parallel to isometric axes are called non-isometric lines.

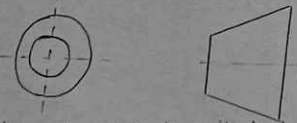
3) Ans: Metal - , Concrete -

4) Ans: A drawing drawn by an engineer having engineering knowledge for the drawing purpose is an Engineering drawing. It is meant for communicating his ideas, thoughts and designs to others. Engineering drawing is a starting point of all Engineering branches such as Mechanical, Production, Civil, Electrical, etc. It is spoken, heard and written in its own way. Engineering drawing has its own theory of projections, its idiom in conventional practices and types of lines.

5) Ans: First angle Projection: In this projection the object is assumed to be situated in first quadrant i.e. in front of V.P. and above H.P. the projections obtained on these planes is called first angle projection.



Third angle projection: In this projection the object is assumed to be situated in the third quadrant that is below H.P. and behind V.P. The front view comes below the XY line and the top view above it.

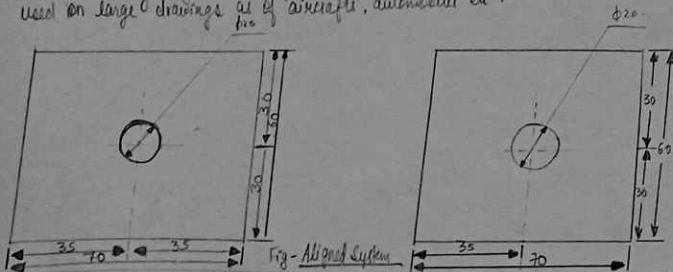


Now a day we are working with first angle projection because it is recommended by the B.S. and it is adopted by almost all the countries of the world since 1983.

Ans: Methods of Placement of dimensioning are of two types:-

1) Aligned System: In this system, all the dimensions are placed above the dimension line such that, they may be read either from the bottom or from the right hand side of the drawing.

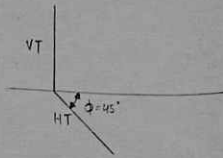
2) Unidirectional System: In this system all the dimensions are placed in one direction such that they may be read from the bottom of the drawing. This system is mainly used on large drawings as of aircraft, automobile etc.



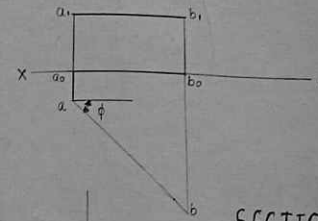
d) Ans:-

MOM ONLY TIME ONCE BUT IF YOU DO IT RIGHT ONCE IS ENOUGH

h) Ans:-



i) Ans:-

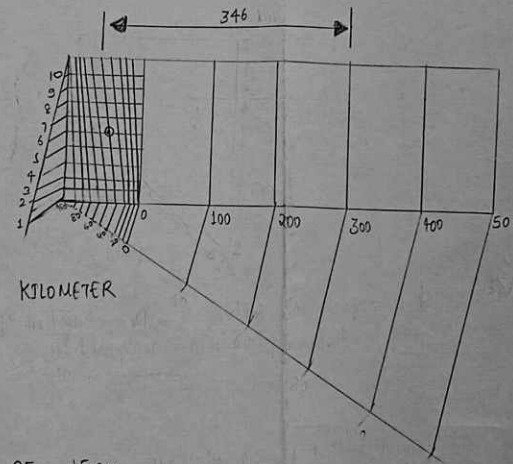


j) Ans: Frustum: When the section plane is parallel to the base of a cone or pyramid, it will form a frustum.



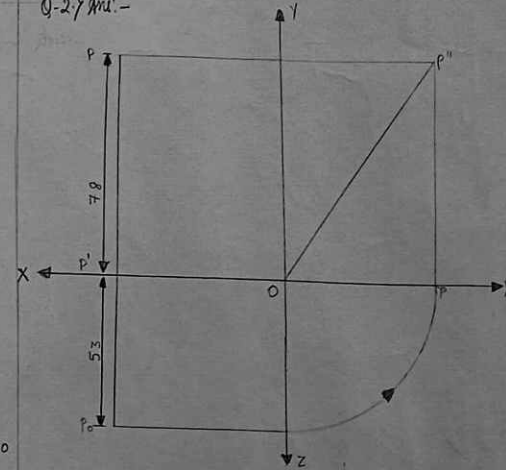
Truncated: When the section plane is inclined to the base plane of solid, it will form a truncated.

Q-5) Ans:-



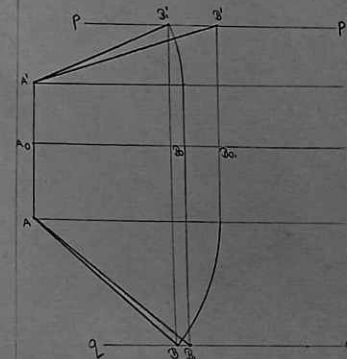
SECTION-B

Q-2) Ans:-

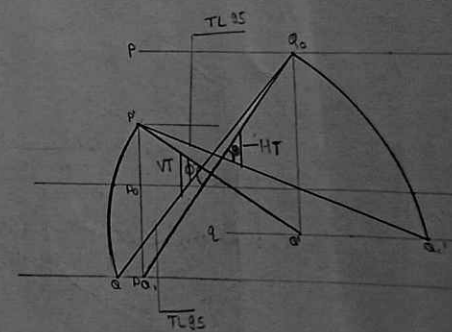


Least distance = $OP'' = 95 \text{ mm}$

Q-3) Ans:-



Q-4) Ans:-



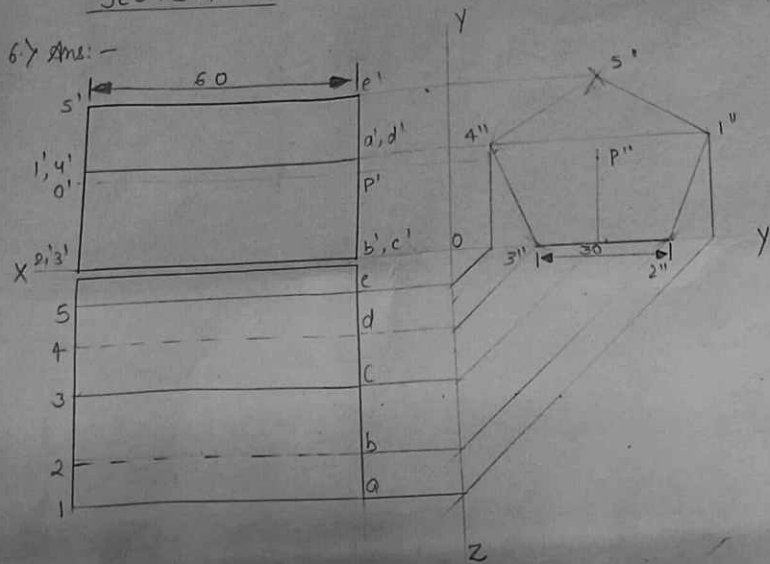
$$\begin{aligned} R.F. &= \frac{15 \text{ cm}}{600 \text{ km}} \\ &= \frac{15 \text{ cm}}{600 \times 1000 \times 100 \text{ cm}} \\ R.F. &= 25 \times 10^{-8} \end{aligned}$$

Max^m distance to be measured = 600 km.

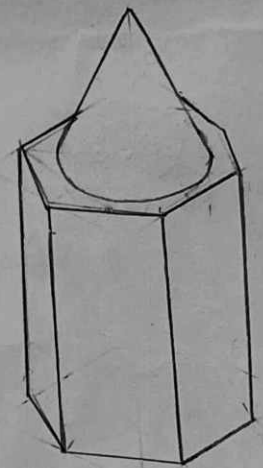
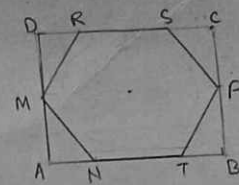
$$\begin{aligned} L.O.S. &= R.F. \times \text{Max}^m \text{ distance to be measured} \\ &= 25 \times 10^{-8} \times 600,000,000 \text{ mm} \\ L.O.S. &= 150 \text{ mm} \end{aligned}$$

SECTION-C

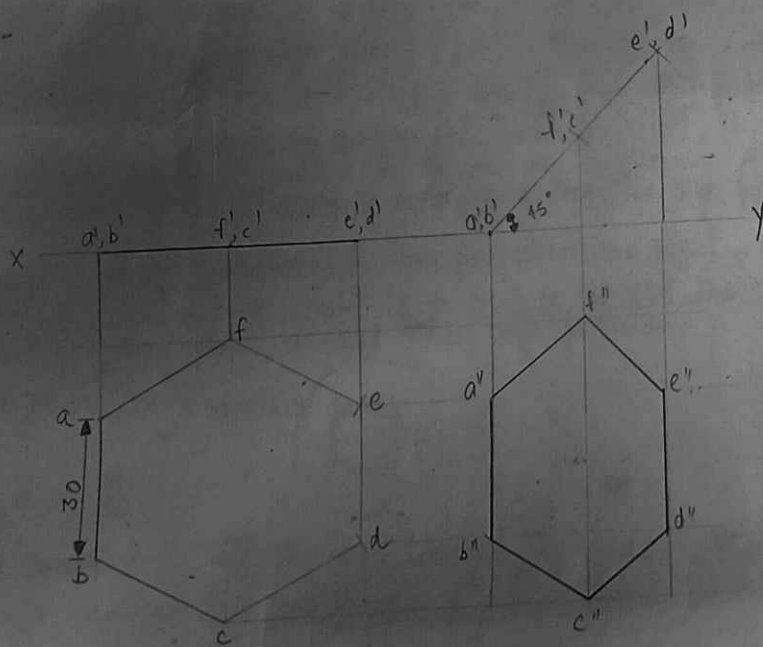
6. Ans: -



9. Ans: -



7. Ans: -



8. Ans: -

