

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE- SEMESTER-I&II EXAMINATION – SUMMER 2025****Subject Code:3110013****Date:03-07-2025****Subject Name:Engineering Graphics & Design****Time:10:30 AM TO 01:30 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
<b>Q.1</b>	(a) Explain the difference between I <sup>st</sup> angle and III <sup>rd</sup> angle projection method.	<b>03</b>
	(b) The distance between two cities is 250 km and is represented by a line of length 50mm on a map. Construct a scale to read 600 km and indicate a distance of 530 km on it.	<b>04</b>
	(c) The foci of an ellipse are 120mm apart. The minor axis 72 mm long. Determine the length of the major axis and draw ellipse by oblong method.	<b>07</b>
<b>Q.2</b>	(a) Differentiate in between Unidirectional system and Aligned system of dimensioning.	<b>03</b>
	(b) Draw the projection of following points on the same X-Y line.	<b>04</b>
	(1) Point A is 25 mm above HP and 30 mm behind V.P.	
	(2) Point B is 20 mm above HP and on V.P.	
	(3) Point C is 10 mm bellow HP and 25 mm behind V.P.	
(4) Point D is on HP and 40 mm in front of V.P.		
(c) A Line AB, 90 mm long, is inclined to H.P. by 30° and inclined to V.P. by 45°. The line is in first quadrant with Point A 15 mm above H.P. and 25 mm in front of V.P. Draw the projection of line AB.	<b>07</b>	
<b>OR</b>		
(c) Draw a parabola by rectangle method, given its base as 90 mm and the height of axis is 75 mm.	<b>07</b>	
<b>Q.3</b>	(a) Define:	<b>03</b>
	(1) Involute (2)Spiral (3) Cycloid	
	(b) A line AB 75mm long is incline at an angle of 45 <sup>0</sup> to H.P. and 30 <sup>0</sup> to V.P. One of its end point A is H.P. as well as in V.P. Determine its apparent angle with V. P.	<b>04</b>
(c) In a slider crank mechanism, crank is 40mm and connecting rod is 160mm in length. The slider moves along a straight line passing through center of crank rotation. Trace the locus of midpoint P of connecting rod.	<b>07</b>	
<b>OR</b>		
<b>Q.3</b>	(a) A line PQ 65 mm long is parallel to HP and 40mm below HP Its two ends P and Q are 25mm and 45mm behind VP respectively. Draw the Projections and find inclination of line with VP.	<b>03</b>
	(b) Construct the involute of circle of 30mm diameter for one turn.	<b>04</b>
	(c) A line EF, 75 mm long, has its end E 20 mm below HP and 25 mm behind VP. The end F is 50 mm below H.P. and 65 mm behind VP Draw the projection of line EF and Find its inclination with HP and VP.	<b>07</b>
<b>Q.4</b>	(a) Draw the lateral development of a cone of base diameter 40mm and height 60mm.	<b>03</b>
	(b) A circular plate of diameter 50 mm is resting on HP on a point on the	<b>04</b>

circumference with its surface inclined at  $45^\circ$  to HP and perpendicular to VP. Draw its projections.

- (c) A cone having base diameter 80mm and height 90mm is resting with its base on H.P.. It is cut by A.I.P. at  $45^\circ$  to the H.P. The cutting plane passes through the midpoint of the axis of the cone. Draw the elevation, the sectional plan and true shape of the section. **07**

**OR**

- Q.4** (a) A square pyramid, base 40 mm side and axis 65 mm long, has its base on the HP and all the edges of the base equally inclined to the VP. It is cut by a section plane, perpendicular to the VP, inclined at  $45^\circ$  to the HP and bisecting the axis. Draw its development. **03**
- (b) An isosceles triangular XYZ having its base XY=50 and altitude 60mm is resting on H.P. on its base XY with its surface making an angle of  $45^\circ$  to H.P. Draw projection of plane. **04**
- (c) A Hexagonal prism is resting on one of its side of base 30mm, such that axis 60mm is inclined at  $45^\circ$  to the HP and the side on which it is resting is inclined at  $30^\circ$  to V.P. Draw the projections. **07**

- Q.5** (a) Explain use of following AUTOCAD commands: **04**  
 (1) MOVE (2) FILLET (3) OFFSET (4) CHAMFER
- (b) Draw isometric drawing for the Figure-1. **10**

**OR**

- Q.5** (a) Discuss advantages of AUTOCAD over conventional drawing. **04**
- (b) Draw the following views for Figure-2 using first angle projection method. **10**  
 (1) Sectional Elevation along A-B from X (2) Top view

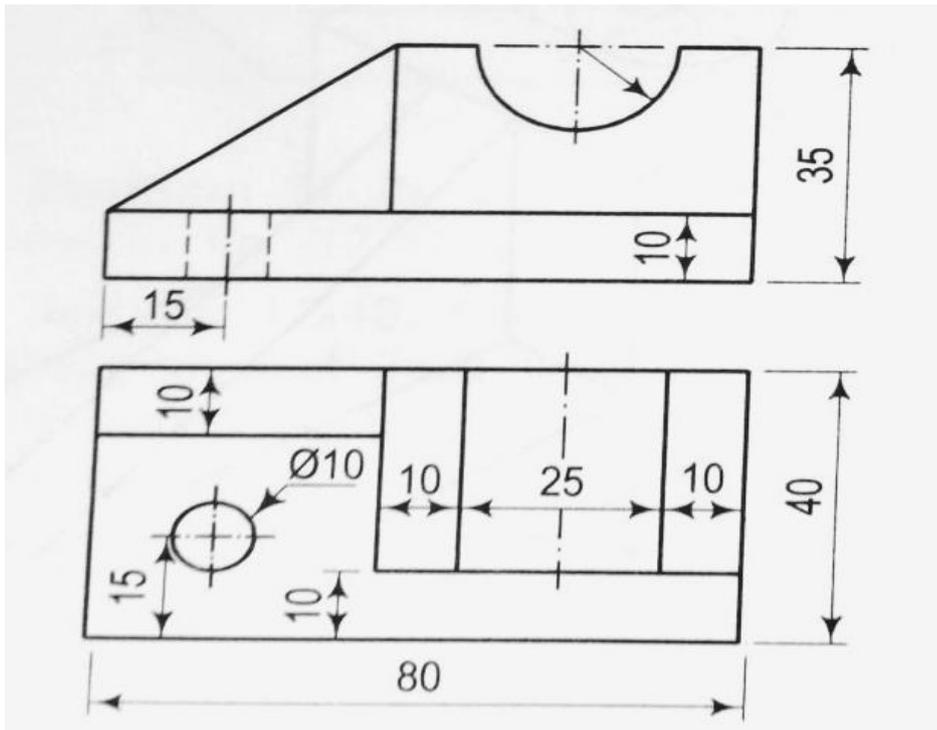


Figure-1

