Enrollment No./Seat No.:

GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering - SEMESTER - 1/2 EXAMINATION - WINTER 2025

Subject Code: BE01000061/BE01R00061 **Date: 26-12-2025**

Subject Name: Engineering Graphics & Design

Time: 02:30 PM TO 05:00 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
Q.1	**(a)**	Divide 100 mm long line into 7 equal parts.	**03**
	(b)	Classify engineering curves. Give at least one application of each conic curve.	**04**
	(c)	(1) Define Representative Fraction and State use of enlarged scales. (2) Draw diagonal scale of R.F. 1:2.5, showing centimeters and millimeters and long enough to measure up to 20 cm. Show the distance 13.4 cm on it.	**07**
Q.2	**(a)**	Draw the projections of the following points on the same xy line keeping the projectors 25 mm apart. (1) Point A is in HP and 20 mm behind VP. (2) Point B is 40 mm above HP and 25 mm in front of VP. (3) Point C is in VP and 40 mm above HP.	**03**
	(b)	Draw the projections of a 100 mm long line PQ which is inclined at an angle of 45° to H.P. and 30° to V.P. One of its end point 'P' is in H.P. as well as in VP.	**04**
	(c)	Draw an ellipse by concentric circle method given the major and minor axis are 120 mm and 80 mm respectively.	**07**
		OR	
	(c)	Construct logarithmic spiral for one convolution. Given the length of the shortest radius vector equal to 10 mm and the ratio of the lengths of the successive radius vectors equal to 7/5 for vectorial angle of 45^{o}.	**07**
Q.3	**(a)**	The distance between the end projectors of line AB is 60 mm. Line AB has its end A 20 mm above H.P. and 25 mm in front of V.P. The other end B is 45 mm above H.P. and 55 mm in front of V.P. Draw projections of line AB.	**03**
	(b)	Draw the following 2D planes with given dimensions. (1) Circle with radius of 2.5 cm. (2) Regular pentagon with side X = 30 mm. (3) Regular hexagon with side 30 mm.	**04**
	(c)	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 H.P. such that the plan appears to be a square. The plan of diagonal AC makes an angle of 20^{o} to the V.P. Draw the projections of the plane and find its inclination with H.P. (Hint. Take a scale of 1:2)	**07**

OR

(a) (1) Define 2nd quadrant. **03**

(2) Define Auxiliary Inclined Plane (AIP).

(3) Draw F.V. and T.V. of 30 mm long line AB perpendicular to H.P. and parallel to V.P. Take point A at any distance from H.P. & V.P.

(b) A circular plate of diameter 50 mm is resting on H.P. on a point on the circumference with its surface inclined at 45° to H.P. and perpendicular to V.P. Draw its projections. **04**

(c) A square plate PQRS of side 35 mm is resting on corner P with diagonal PR making 30^o with H.P. and diagonal QS inclined to V.P. by 60^o and parallel to H.P. Draw the projections of the square plate PQRS. **07**

Q.4 **(a)** Classify solids in detail. **03**

(b) (1) Explain concept of orthographic projection. **04**

(2) Classify orthographic projections.

(c) A hexagonal pyramid, side of base 25 mm and axis 55 mm long, has one of its slant edges on the H.P. This slant edge is inclined at 45^o to the V.P. Draw its projections when the apex is nearer to V.P. **07**

OR

(a) Name the solid. **03**

(1) I am a pyramid with triangular base having all sides of base and faces are equal.

(2) I am a prism with square base having all sides of bases and faces are equal.

(3) I have two equal size circular bases.

(b) Write four differences between first angle and third angle projection methods. **04**

(c) A cone, base diameter 80 mm and axis length 80 mm is resting on its base on the H.P. It is cut by an AIP inclined at 45^o to the H.P. and cutting the axis at 30 mm from the apex. Draw front view, sectional top view and true shape of the section. **07**

Q.5 **(a)** Write three industrial applications of AutoCAD. **03**

(b) Using first angle projection method, draw F.V. and T.V. of the object given in Figure 1. **04**

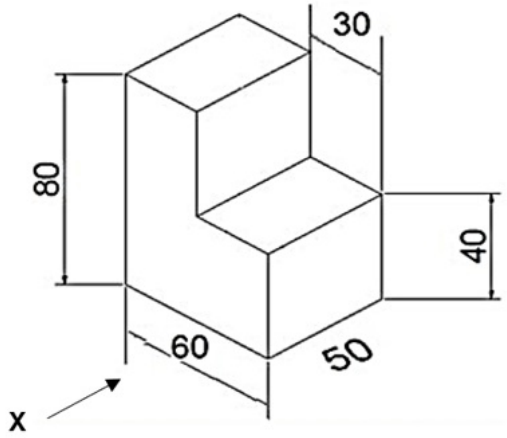

Figure 1 (Que. 5 (b))

(c) List the seven essential commands of modify panel in AutoCAD, state their usage and explain their execution in workspace. **07**

OR

(a) Write three advantages of AutoCAD over conventional manual drawing. **03**

(b) Using third angle projection method, draw F.V. and R.H.S.V. of the object given in Figure 2. **04**

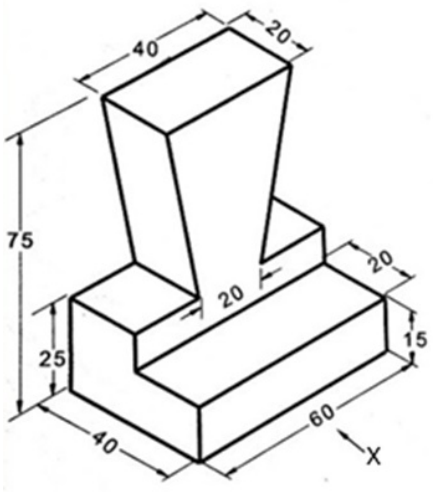

Figure 2 (Que. 5(b) OR

(c) Write name of the following AutoCAD command symbols, state their use and explain their execution. **07**

(1) 

(2) 

(3) 

(4) 

(5) 

(6) 

(7) 

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