Seat No./Enrollment No.: _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF ENGINEERING – SEMESTER 1 – EXAMINATION – SUMMER 2026

Subject Code: BE01000061 /BE01R00061 **Date: 22/06/2026**

Subject Name: Engineering Graphics & Design

Time: 10:30 AM TO 01:00 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.

Q.1	**(a)**	List different conics and explain how to get them from a right circular cone.	**03**
	(b)	Draw involute of a regular pentagon of 50 mm side.	**04**
	(c)	On a map, the distance between two points is 14 cm. The real distance between them is 20 km. Draw the diagonal scale of this map to read kilometre and hectometre, and to measure up to 25 kilometre. Show a distance of 17.6 kilometre on this scale.	**07**
Q.2	**(a)**	Draw projections of the following points along a same reference line keeping 25 mm distance between projectors. (i) A in the HP, 20 behind VP. (ii) B 40 above HP, 25 in front of VP. (iii) C in the VP, 40 above HP	**03**
	(b)	A line AB 80 mm long has its end A 20 mm above HP and 25 mm in front of VP. The line is inclined at 45° to HP and 35° to VP. Draw its projections.	**04**
	(c)	A line AB measuring 75 mm long has one of its ends 50 mm in front of VP and 15 mm above HP. The top view of the line is 50 mm long. Draw and measure the front view. The other end is 15 mm in front of VP and is above HP. Determine the true inclinations.	**07**
		OR	
Q.2	**(c)**	A line PQ of 80 mm is in first Quadrant, one end is situated at 10 mm above HP and 15 mm in front of VP. The line is inclined at 40° to HP and the top view makes 50° with VP. Draw line and find the true inclination of the line with VP.	**07**
Q.3	**(a)**	Draw following plane figures: (i) regular triangle, regular quadrilateral and (iii) regular pentagon	**03**
	(b)	A square lamina of size 40 mm is perpendicular to HP and inclined at 30° to VP. Draw the projections. One of the vertical edges is at 25 mm in front of VP and the bottom edge is 35 mm above HP.	**04**
	(c)	A pentagon of side 30 mm rests on the ground on one of its corners with the sides containing the corner being equally inclined to the ground. The side opposite to the corner on which it rests is inclined at 30° to VP and is parallel to HP. The surface of the pentagon makes 50° with the ground. Draw the projections of the pentagon.	**07**
		OR	
Q.3	**(a)**	Draw sketch for each of the following: (i) irregular plane (ii) regular plane (iii) composite plane.	**03**
	(b)	A Triangular plate of base 40 mm and height 50 mm is in first quadrant in such a way that its surface is perpendicular to HP and inclined to VP at an angle of 30°. Draw the projections. The base of the triangle is perpendicular to HP.	**04**

(c) A circular lamina of 50 mm diameter rests above HP on a point P on its circumference. If its plane is inclined at 45° to HP and the top view of the diameter PQ makes an angle of 50° with VP, draw the projections of the lamina. **07**

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

(b) A square prism of 40 mm side and 70 mm height is resting on HP with one of its rectangular faces inclined at 60° to VP. If the nearest vertical edge is 20 mm in front of VP, draw its projections. **04**

(c) A cone of base diameter 50 mm and 60 mm height has one of its generators on HP. If the axis of the cone is seen as 45° inclined to XY line in the top view and the apex is nearer to VP, draw the projections of the cone. **07**

OR

Q.4 **(a)** Differentiate between 'polyhedra' and 'solids of revolution'. **03**

(b) A Hexagonal pyramid, side of base 30 mm and height 60 mm rests with its base on HP such that one of the edges of the base is parallel to and 10 mm in front of VP. Draw its projections. **04**

(c) A pentagonal pyramid side of base 30 mm and 60 mm height rests with its base on HP. One of the edges of its base is perpendicular to VP. A section plane perpendicular to VP and inclined at 45° to HP bisects the axis. Draw the sectional top view and front view. Also draw the true shape of the section. **07**

Q.5 **(a)** State three fundamental rules for 'Hatching' (Section Lining). **03**

(b) Give reasons for not using Second and Fourth Angle projections in practice. **04**

(c) Draw the full sectional FV, TV and LHSV of the object shown in the Figure 1. **07**

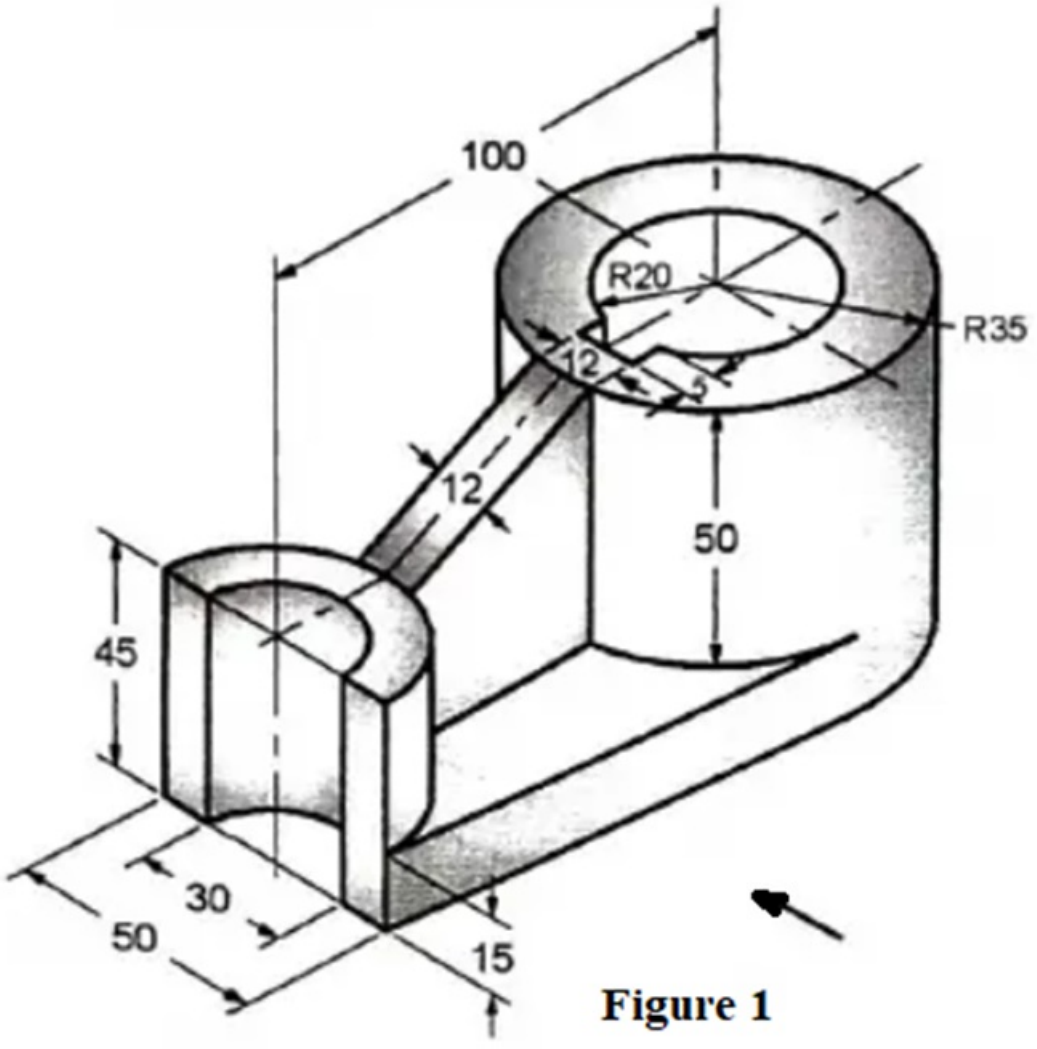


Figure 1

OR

Q.5 **(a)** Differentiate between First Angle and Third Angle projection methods. **03**

(b) Explain the purpose and need for Sectional Views. **04**

(c) Draw the full sectional FV, TV and LHSV of the object shown in the Figure 2. **07**

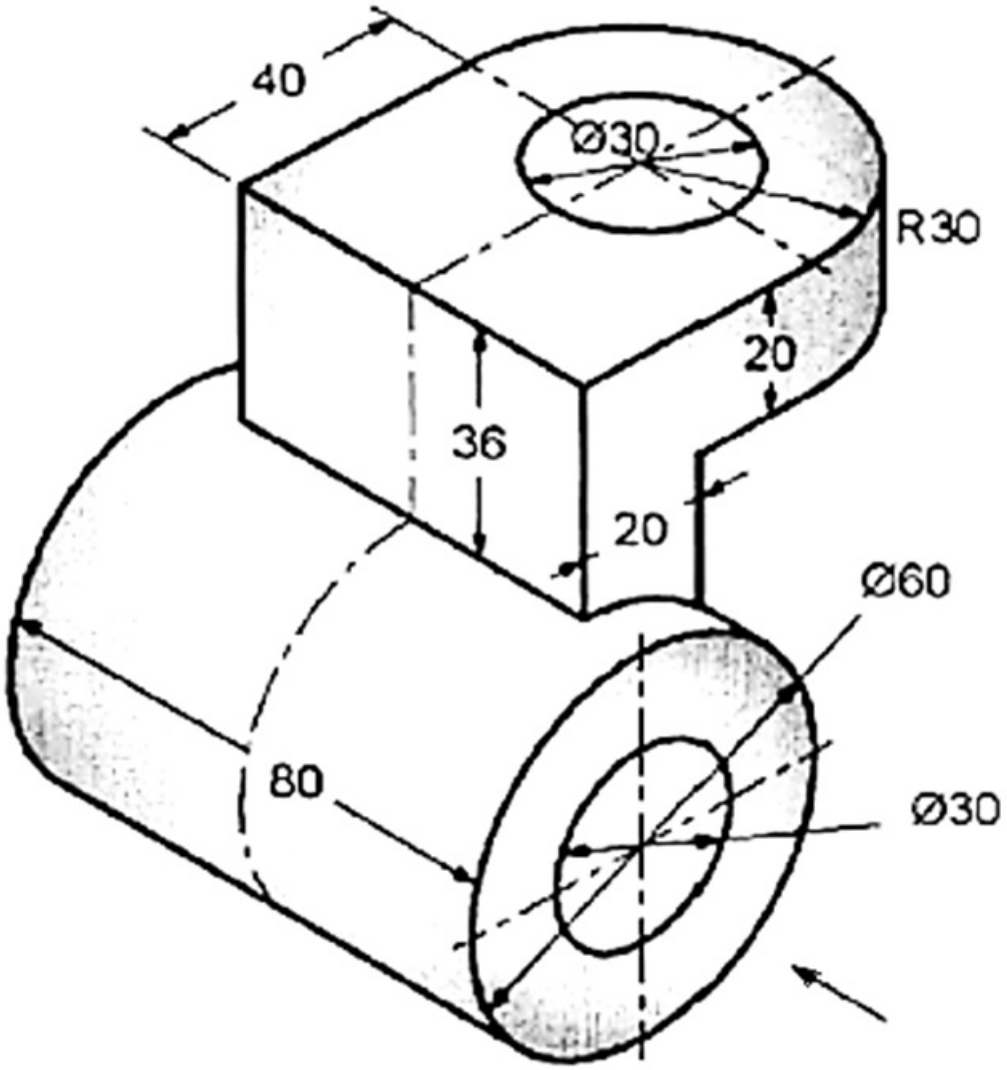


Figure 2

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