

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER- I & II EXAMINATION – SUMMER 2026

Subject Code:3110013

Date:01-07-2026

Subject Name:Engineering Graphics & Design

Time:10:30 AM TO 01:30 PM

Total Marks:70

Instructions:

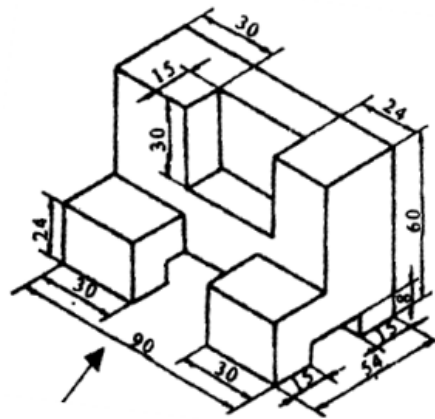
1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1 (a)** Explain about development of lateral surface of various types of solids used in engineering drawing. **03**
- (b)** Draw the projections of the points A and B on the same X-Y line. **04**
(a) Point 'A' is in second quadrant and 45 mm from H.P and 25 mm from VP.
(b) Point 'B' is in Fourth quadrant and 35 mm from H.P and 55 mm from VP.
- (c)** The major and minor Axis of an ellipse is 120 mm and 80 mm respectively. Draw upper half ellipse by concentric circle method and lower half by arc of circle method. Also Find distance between its foci points. **07**
- Q.2 (a)** Define Cycloid. Also explain in brief about its types using suitable sketch. **03**
- (b)** Draw a diagonal scale of R.F, 1:12 showing yard, feet and inch and long enough to measure up to 3 yards. Show a distance of 1 yard 2 feet and 3 inch on it. **04**
- (c)** A semicircular plate of 90mm diameter has its straight edge in the HP and inclined at 45° to the VP. The surface of the plate makes an angle of 30° with the HP. Draw its projections. **07**
- OR**
- (c)** A line PQ is 120 mm long. It is inclined at 45° to the HP and 30° to the VP. The end P is 15 mm above HP and 25 mm in front of VP. Assuming the end Q in the first quadrant, draw the projections of the line PQ. **07**
- Q.3 (a)** Explain the importance of scale in engineering drawing. Explain about different types of scales and their use. **03**
- (b)** Draw an involute of a square having 30 mm side. Also draw normal and tangent at any suitable point on it. **04**
- (c)** The front view and top view of a line AB is 55mm and 50mm respectively. The line is 75mm long. Point A is 10 mm below HP and 40 mm behind VP. Draw the projections of the line AB assuming entire line in third quadrant. Also find its inclinations with HP and VP. **07**
- OR**
- Q.3 (a)** A line CD is 70mm long. Point C is 20mm above HP and 30 mm in front of VP and point D is 60mm above HP and 50 mm in front of VP. Draw its projections. **03**
- (b)** An insect is moving on a stick AB 100mm long from point A to B in T sec. the stick also revolves along its midpoint c and completes one revolution in the T sec. Draw the locus of the insect. **04**
- (c)** The distance between the end projectors of a line PQ is 60 mm. The point P is 20mm below HP and 25mm behind VP. Point Q is 12mm above HP and 40mm in front of VP. Draw projections of line PQ. Also find its true length and its inclinations with HP and VP. **07**
- Q.4 (a)** A cone of 40 mm diameter and 60mm length is resting on HP. Its axis is parallel to H.P and V.P both. Draw its projection. **03**
- (b)** A square prism with side of base 35mm and axis 50mm long, lies with one of its longest edges on HP such that its axis is perpendicular to VP. Draw the projections of the prism when one of its rectangular faces containing the above longer edge is inclined to HP at 30° **04**

- (c) Pentagonal lamina of edges 25 mm is resting on HP with one of its corners such that the plane surface makes an angle of 60° with HP. The two of the edges containing the corner on which the lamina rests make equal inclinations with HP. When the edge opposite to the corner makes an angle of 45° with VP and nearer to the observer. Draw the top and front views of the plane lamina in this position. **07**

OR

- Q.4** (a) A cylinder with 50 mm base diameter and 80 mm height is cut by a sectional plane from the center of axis such that the cross-section is an ellipse with major axis 70 mm. draw the projection of cylinder and find angle of sectional plane with HP, if the sectional plane is perpendicular to VP. **03**
- (b) A $30^\circ - 60^\circ$ set square of 60 mm longest side is so kept such that the shortest side is in VP and perpendicular to HP. It is making an angle with VP such that its front view is equilateral triangle. Draw the projections of the set square. **04**
- (c) A square prism with side of base 30mm and axis 50mm long is resting on HP on one of its edge of base. Its axis is inclined at 60° to HP. The edge on which it rests on HP is inclined at 45° to VP. Draw its projections. **07**
- Q.5** (a) List various methods to draw circle using AutoCAD. **03**
- (b) Draw isometric view of the frustum of cone whose height is 60 mm, Base radius is 40mm and top radius is 25mm. **04**
- (c) Draw all three orthographic views of the object given below using third angle projection. **07**



OR

- Q.5** (a) Draw only Top view of the object given in fig for Q.5(c)(above). **03**
- (b) Explain difference between orthographic projection and isometric projection. **04**
- (c) Draw isometric view of the object. Its orthographic views are given below. **07**

