

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-I & II(NEW) EXAMINATION – WINTER 2022****Subject Code:3110013****Date:10-03-2023****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
Q.1	(a) Define representative fraction (R.F.) of scale. Also list types of scale according to value of R.F.	03
	(b) In a slider crank mechanism OBA, the crank OB is 200 mm long and the connecting rod BA is 850 mm long. Plot the locus of point P where P is midpoint of connecting rod. Refer figure 1.	04
	(c) Construct one complete turn of an involute of a circle having diameter 30 mm. Also draw tangent and normal to the curve S. The point S is a point on the involute and it is at a distance of 45mm from centre of the circle.	07
Q.2	(a) Draw the projection of following points on the same X-Y line. (1) Point A is 20 mm above HP and 30 mm behind V.P. (2) Point B is on HP and 40 mm in front of V.P. (3) Point C is 10 mm below HP and 25 mm behind V.P.	03
	(b) A line MN, 60 mm long, is in V.P. It makes an angle of 30° with the H.P. The end point M is 15 mm above H.P. Draw projections of line MN. Also measure Plan length of the line.	04
	(c) The line AB has its end A, 15 mm above H.P. and 10 mm in front of V.P. The end B is 60 mm above H.P. The distance between the end projectors is 50 mm. The plan of the line is inclined at 25° to X-Y line. Draw the projections of line. Find true length and inclination of the line with H.P.	07
	OR	
	(c) Draw the projections of a straight line 80 mm long inclined at 60° to H.P. and 30° to V.P. with end A in the H.P. and the end B in the V.P.	07
Q.3	(a) A pentagonal plate, side 25 mm, is inclined to H.P. by 30°. It is perpendicular to V.P. and resting on HP on its one of the side. Draw projections of the plate.	03
	(b) A circular disk, 50 mm in diameter, is resting on the H.P. on one of the point A of the circumference. Plane is inclined to the H.P. such a way that the top view of it is an ellipse of minor axis 40 mm. Draw its projections.	04
	(c) A cone, base diameter 30 mm and height 60 mm, is resting on its base. It is cut by AIP inclined at 45° to H.P. and passing through midpoint of the axis of cone. Draw front view, sectional top view and true shape of this sectional solid.	07
	OR	
Q.3	(a) A hexagonal plate, side 25 mm, is inclined to H.P. by 45°. It is resting on HP on one of the corner. The plate is perpendicular to V.P. Draw projections of the plate.	03

- (b) A square plate, 40 mm side, is resting on the H.P. on one of its sides. The plate is inclined to H.P. such a way that its top view looks like a rectangle with 20 mm shorter side. Draw its projections. **04**
- (c) A square prism, side of base 30 mm and height 45 mm, is resting on H.P. on one of the corners of the base. The longer edge containing that corner on which it rests, is inclined at 45° to H.P. and top view of it is inclined at 30° to V.P. Draw the projections when top end of the prism is nearer to V.P. **07**
- Q.4** (a) Develop the complete surface of a square prism of side of base 40 mm and height 80 mm. **03**
- (b) Draw front view of an object shown in figure 2 using first angle projection methods. **04**
- (c) Draw top view and left hand side view of object shown in figure 2 using first angle projection methods. **07**
- OR**
- Q.4** (a) Draw the development of the lateral surface of a square pyramid, side of base 30 mm and height 50 mm, resting with its base on H.P. All edge of the base are equally inclined to V.P. **03**
- (b) Draw front view of an object shown in figure 3 using first angle projection methods. **04**
- (c) Draw top view and left hand side view of object shown in figure 3 using first angle projection methods. **07**
- Q.5** (a) Explain any three AutoCAD commands in short **03**
(1) Spline (2) Rotate (3) Polygon (4) Multiline
- (b) Draw isometric scale showing 100 mm isometric length equivalent to 100mm normal length. **04**
- (c) Draw isometric projection of an object whose front view and top view are shown in figure 4. **07**
- OR**
- Q.5** (a) Explain any three AutoCAD commands in short. **03**
(1) Circle (2) Array (3) Mirror (4) Fillet Command
- (b) Draw isometric shape of a circle having 60 mm in diameter using four centre methods. **04**
- (c) Draw isometric projection of an object whose front view, top view and side view are shown in figure 5. **07**

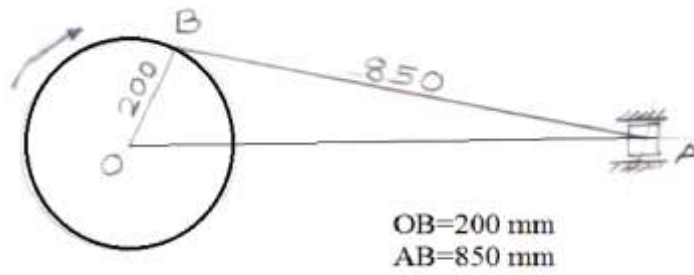


Figure 1

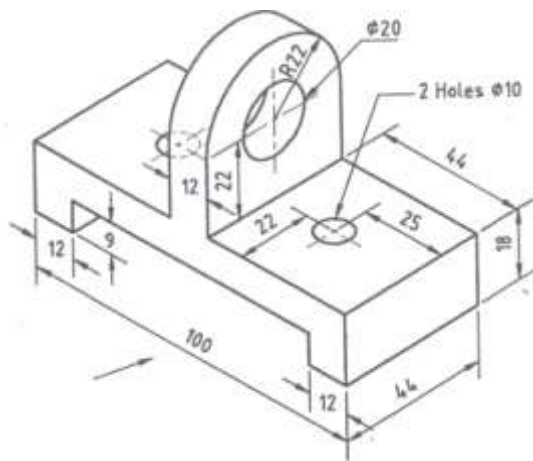


Figure 2

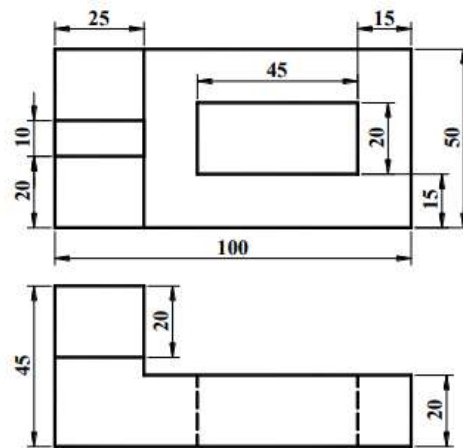


Figure 4

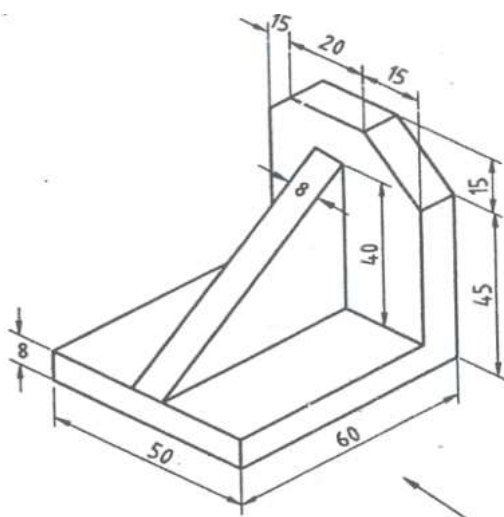


Figure 3

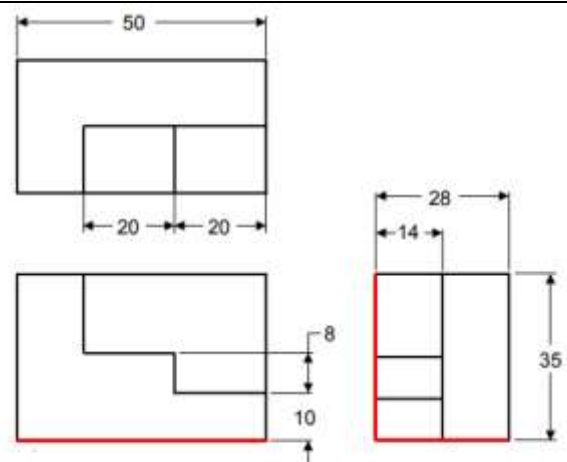


Figure 5