GUJARAT TECHNOLOGICAL UNIVERSITY
BE- SEMESTER–I & II(NEW) EXAMINATION – SUMMER 2023

Subject Code:3110013   **Date:05-08-2023**

Subject Name:Engineering Graphics & Design
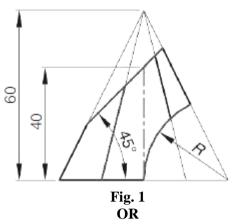
Time:10:30 AM TO 01:30 PM   **Total Marks:70**

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 the functions with symbols: 1) continuous thin, 2) Chain thin and thick at ends and 3) Chain thin	**03**
	(b)	Construct a scale to measure km, 1/8 km and 1/40 of a km, in which 1 km is represented by 4 cm. Mark on this scale a distance of 2.775 km.	**04**
	(c)	Construct the Involute of hexagon of 25 mm sides.	**07**
Q.2	**(a)**	Draw the projections of the following points on the same ground lines, keeping the projectors 15 mm apart: (1) A in the H.P. and 20 mm behind V.P. (2) B 25 mm below the H.P. and 25 mm behind V.P. (3) D 40 mm below H.P. and 25 mm in front of V.P.	**03**
	(b)	A person travels in a curved path such that 25 mm distances from a fixed straight line and fixed point remain the same. Construct the traced curvature path by person and name the curve.	**04**
	(c)	A wheel rolls over the horizontal straight road and covers 220 mm distance in one rotation. Draw the path traced by the point P which is initially at the point of contact between the wheel and the road.	**07**

OR

	(c)	Draw an Archimedean spiral of 1½ convolutions, the greatest and least radii being 115 mm and 15 mm respectively. Draw a tangent and a normal to the spiral at a point 63 mm from the pole.	**07**
Q.3	**(a)**	A line CD, 80 mm long is inclined at 45° to H.P. and 30° to the V.P., its end C is in H.P. and 40 mm in front of V.P. Draw the projections.	**03**
	(b)	A hexagonal plane of 30 mm side, rests on the V.P. on an edge such that the surface is inclined at 45° to the V.P. Draw its projections.	**04**
	(c)	A circular plane of 80 mm diameter has one of the ends of the diameter in the H.P. while the other end is in the V.P. The plane is inclined at 30° to the H.P. and 60° to the V.P. Draw its projections.	**07**

OR

Q.3	**(a)**	A 100 mm long line PQ is inclined at 30° to H.P. and 45° to the V.P. Its mid-point is 35 mm above the H.P. and 50 mm in front of V.P. Draw its projections.	**03**
	(b)	The top view of a lamina whose surface is perpendicular to V.P. and inclined at an angle of 45° to H.P. appears as a regular hexagon of 30 mm side, having a side parallel to the reference line. Draw the projections of plane and obtain its true shape.	**04**
	(c)	Draw the projections of a rhombus having 100 mm and 40 mm long diagonals. The bigger diagonal is inclined at 30° to H.P. with one of the end point in H.P. and the smaller diagonal is parallel to both the planes.	**07**
Q.4	**(a)**	Classify solids with shapes of drawings.	**03**
	(b)	A square pyramid, side of base 40 mm and axis 60 mm is resting on its base on H.P. Draw its projections when (a) a side of the base is parallel to V.P., (b) a side of the base is inclined at 30° to V.P., and (c) all the sides of the base are equally inclined to V.P.	**04**

(c) A hexagonal pyramid, 30 mm base side and 60 mm long axis rests on the H.P. with a side of base parallel to V.P. It is cut by planes perpendicular to V.P., to obtain the front view as shown in Fig. 1. Draw the development of the lateral surface of the retained solid. **07**

Fig. 1

OR

Q.4 (a) Explain difference of any two projection methods. **03**

(b) A cylinder with 50 mm base diameter and 80 mm long axis, is lying on a generator on the H.P. with its axis parallel to the V.P. It is cut by an A.I.P. inclined at 30° to the H.P. and passes through a point on the axis 30 mm from one of its ends. Draw its anyone sectional top view. **04**

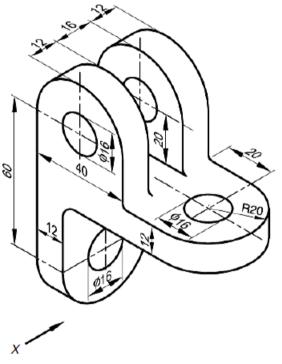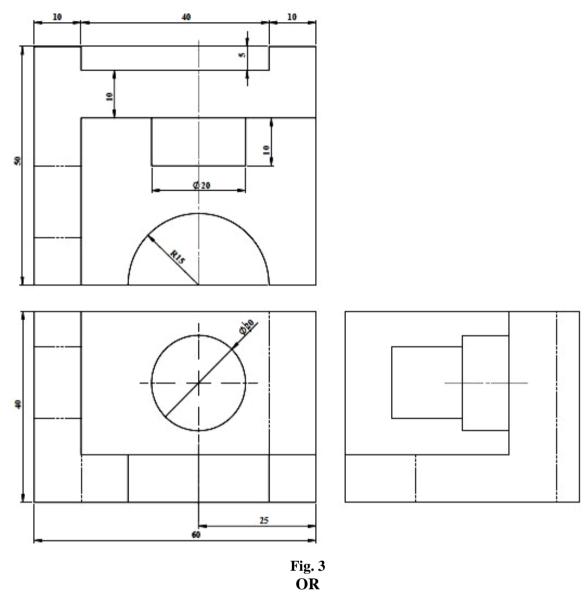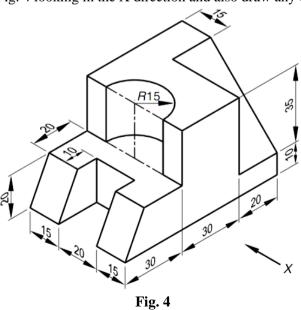**(c)** Draw any three views using orthographic projections of fig 2. **07**

Fig. 2

Q.5 (a) State the importance of AutoCAD in engineering field. **03**

(b) Explain the importance of file extension in the communication of drawing. **04**

(c) Draw isometric view of given fig. 3. **07**

2

Fig. 3

OR

Q.5 **(a)** Enlist any six CAD drawing preparatory commands with its symbols and function. **03**

(b) Identify the command, that used 1) to remove certain unwanted part, 2) to show sectional view, **04**
3) to make a continuous line and 4) to make a circular shape at the edge of drawing.

(c) Draw the Front view of Fig. 4 looking in the X direction and also draw any one side view. **07**

Fig. 4

3