04/01/25 (AN)

Roll No. | | | | | | | | | | |

ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)
B.E / B. Tech (Full Time) END SEMESTER EXAMINATIONS
NOV / DEC 2022

Semester I Common to all Branches

ME23C01 Engineering Drawing and 3D Modelling / GE 3155 Engineering Drawing

(Regulation – 2023)

Time: 3 hrs. (After noon) Max. Marks: 100

COURSE OUTCOMES

CO1	**CO1:** Construct and identify different types of conic curves and special curves, and project the points and lines pertaining to engineering applications
CO2	**CO2:** Project and visualize surfaces and solids in different orientations and utilize the CAD tools for designing.
CO3	**CO3:** Create and draft accurate 3D models and 2D drawings of machine parts manually as well as using CAD software
CO4	**CO4:** Determine the true shape of a sectioned solid and draft the assembled parts accordingly
CO5	**CO5:** Develop lateral surfaces of sectioned solids and design sheet metal components

BL – Bloom's Taxonomy Levels

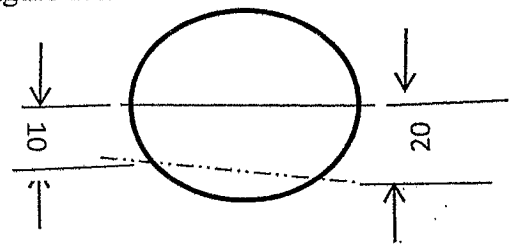
(L1-Remembering, L2-Understanding, L3-Applying, L4-Analysing, L5-Evaluating, L6-Creating)

PART- A (5x16= 80Marks)

(Answer all Questions)

(Use suitable scale where ever necessary)

Q. No.	Questions	Marks	CO	BL
1 (a)	A teapoy table top is to be cut from a rectangle wooden board by tracing a curve on the board with the following conditions: A point on the curve is moving in such a way that the distance of the point on the curve from the fixed straight line is equal to twice its distance from fixed point **F**. The fixed point **F** is **50** mm from the fixed straight line. Draw the curve and name it; also draw a normal and tangent at any point on the curve.	**16**	1	4
	OR			
1 (b)	A straight line PQ has one end 20 mm in front of VP and 25 mm above HP. The top view length is 60 mm and makes an angle of 35^0 with the VP. Draw the projections and determine the true length and true inclinations of the line with the HP and VP.	**16**	1	4

2 (a)	A circular photo frame of negligible thickness with diameter 20 cm rests on one of its point on the circumference of on a horizontal surface. The diameter through the resting point is inclined at an angle of 45^0 to the horizontal surface and the top view of the diameter passing through the resting point is inclined at 60° to a vertical plane perpendicular to the horizontal surface. Draw its projections.	**16**	2	3
	OR			
2 (b)	A right pentagonal pyramid of base side 35 mm and altitude 60 mm rests on one of its triangular faces on the HP; the axis of the pyramid is inclined to the VP at an angle of 50^0. Draw the projections of the solid and find the apparent inclination of the axis with the HP.	**16**	2	3
3 (a)	A triangular prism with base sides 40 mm and axis length 70 mm is placed over a rectangular prism of sides 50 mm x 40 mm x 70 mm. The rectangular face of the triangular prism is aligned with the 40 x 50 rectangular face of the rectangular prism. Draw isometric view of the solid pair.	**16**	3	4
	OR			
3 (b)	A rectangular prism with base sides 60 mm x 40 mm and length 70 mm is placed on its 40 mm side on the ground with its axis perpendicular to the picture plane. The axis is **50** mm to the right of the station point. The rectangular face perpendicular to the ground is **10** mm behind the **PP.** The station point is **80** mm above the ground and **40** mm in front of the **PP.** Draw the perspective view of the prism.	**16**	3	4
4 (a)	A cone of base diameter 60 mm and axis length 70 mm is resting on its base on the HP. A section plane perpendicular to HP and passing through two points on the base edge of the cone at distances of 10 mm and 20 mm from the base diameter parallel to VP cuts the solid similar to that shown in figure 1. Draw the sectional front view and true shape of the sectioned cone.  **Figure 1** (not to scale)	**16**	4	4
	OR			
4 (b)	A hollow square prism of height 70 mm with outer base sides 60 mm and inner base sides 40 mm is resting on the HP on its base with its faces equally inclined to the VP. It is cut by a section plane parallel to VP, perpendicular to HP and passing through the axis of the prism. Draw the sectional front view of the solid.	**16**	4	4

5 (a)	A water tank resembles a frustum of a hexagonal pyramid placed over a hexagonal prism with their axis coinciding and their base edges aligned parallel. The top portion of the frustum of hexagonal pyramid has sides 6 meters and the bottom portion has sides 4 meters and the height of the frustum is 5 meters. The hexagonal prism has a side of base 4 meters and height 8 meters. Draw the development of the lateral surface of the water tank to calculate the area for colour washing.	**16**	5	4
	OR			
5 (b)	A funnel is to be fabricated from sheet metal with two parts joining one over the other. The top part of the conical frustum has a diameter of 80 mm and the bottom part has a diameter of 20 mm coinciding with the diameter of 20 mm of the cylindrical part with both the axis aligned vertically. The height of the frustum of the cone and the cylinder measures 60 mm. Draw the development of the funnel.	**16**	5	4

PART- B (1x20 = 20Marks)

Answer Compulsorily

(Use suitable scale where ever necessary)

6	Draw the front view, top view and right side view for the component shown in figure 2 with free hand sketch in the arrow direction. Specify the angle of projection.			

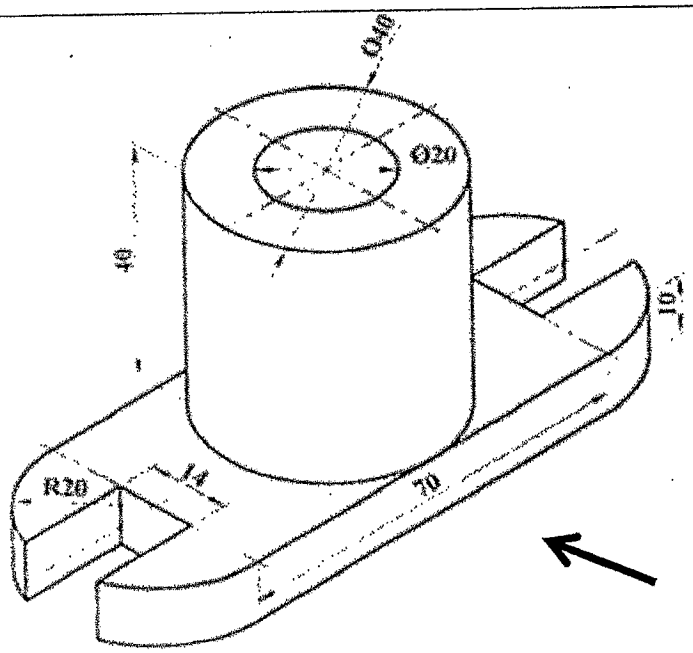


Figure 2 All dimensions in mm