

Name:

Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, May 2023

Program Name: B Tech (Mechatronics)

Course Name: CAD/CAM

Course Code: MEPD 3018

Nos. of the page(s) : 02

Instructions:

Semester: VI

Time: 03 hrs

Max. Marks: 100

SECTION A

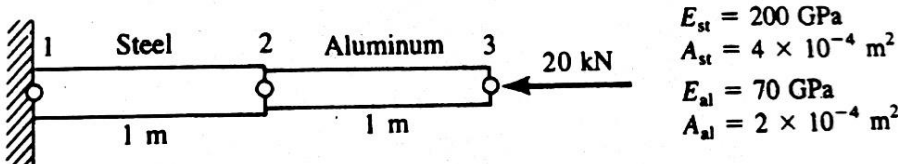
S. No.		Marks	CO
Q 1	List the criteria for evaluation of a CAD system.	4	CO1
Q 2	Why is the application of computers in engineering industry becoming so popular? Name a few areas in which CAD is being widely used.	4	CO1
Q 3	Explain the concept of getting orthographic projection of a 3D object.	4	CO1
Q 4	Discuss the importance of concurrent engineering approach in product development.	4	CO4
Q 5	What are the various activities of a manufacturing plant which can be carried out through computer control?	4	CO4

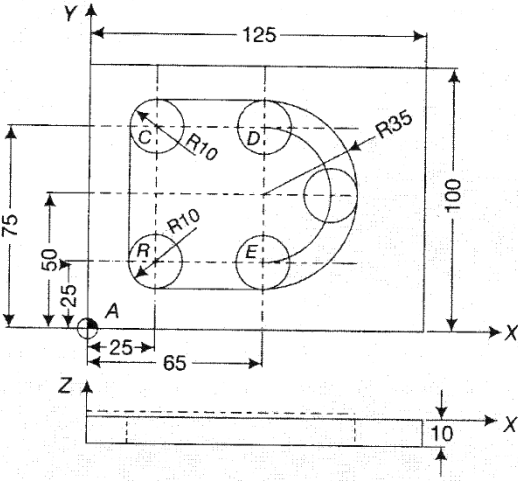
SECTION B

Q 6	<p>A triangle is defined in two dimensional system by its vertices (2,4), (5,7), and (7,3). Perform the following transformation on this triangle.</p> <ol style="list-style-type: none">1. Translate the triangle in space by 3 units in x-direction and 7 units in Y-direction.2. Scale the original triangle by factor of 2. <p style="text-align: center;">OR</p> <p>Find the reflection matrix when the axis of reflection is given by equation $Y = 4x$. Also find the reflection of the point (4, 6) about the same line.</p>	10	CO2
Q 7	Justify the need of cutter compensation and explain how it is incorporated in the CNC program with example.	10	CO5
Q 8	Why Bezier splines are highly useful and convenient for curve and surface design? Generate a Bezier curve with following control points (1, 2), (3, 4), (6, -6) and (10, 8).	10	CO3

Q 9	Develop a flow chart for Bresenham's line algorithm to draw a line on screen.	10	CO2
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SECTION-C

Q 10	<p>A bar assembly is subjected to compression is modeled by two bar elements, as shown in Figure. Determine the nodal displacements and reaction force and stress in the elements.</p> 	20	CO3
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Q 11	<p>Component to be machined is shown in Fig. below. It is assumed that the pocket is through and hence only a finish cut of the pocket is to be performed. The tool to be used is a 20 mm diameter slot drill. Write CNC program.</p>  <p style="text-align: center;">OR</p> <p>Write word address format part program for drilling 2 similar holes in a rectangle plate of thickness 5 mm at points with coordinates (10, 25) and (55, 60) and also show the part on diagram. Origin and start point is (0, 0). Take spindle speed 1675 rpm and feed 200 mm/min.</p>	20	CO5
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