UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
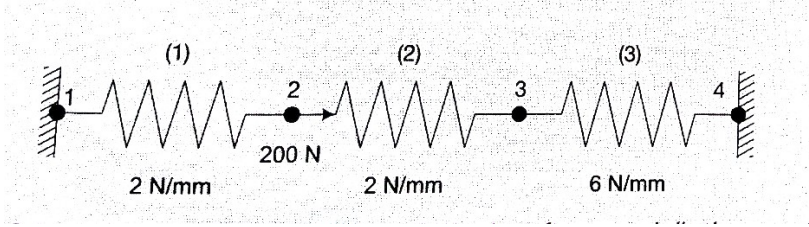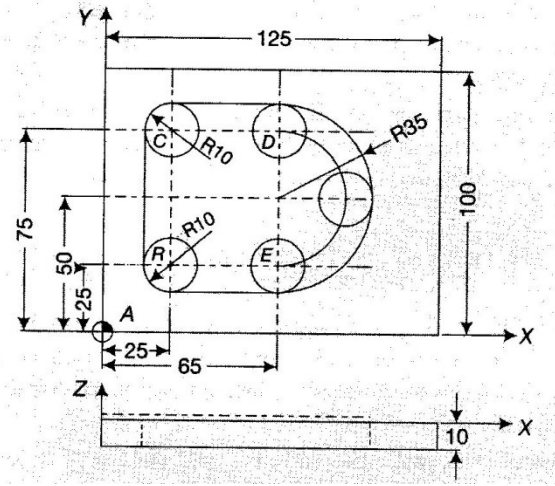### End Semester Examination, May 2022

Course: CAD/CAM
Program: B Tech Mechatronics
Course Code: MEPD 4010

Semester: VI
Time   : 03 hrs.
Max. Marks: 100

Instructions: Attempt All

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	What do you understand by the Implicit and Parametric representation of curves?	4	CO1
Q 2	Differentiate between incremental and absolute coordinate system.	4	CO1
Q 3	Differentiate between computer aided design and computer aided engineering.	4	CO1
Q 4	What is concurrent engineering?	4	CO1
Q 5	What is pixel? And how is it used to generate graphical entity on screen.	4	CO1

SECTION B
(4Qx10M= 40 Marks)

Q 6	Four vertices of Bezier polygon are P0 (1, 1), P1 (2, 3), P2 (4, 3), and P3 (3, 1). Develop the Bezier curve.	10	CO2
Q 7	Explain the process of assembly of element matrices as applicable in finite element modelling.	10	CO2
Q 8	Show that for $x = t^2$, $y = t$ the transformation $$\{X \quad y \quad 1\}\begin{bmatrix} 0 & -2 & 2 \\ -2 & 2 & -2 \\ 1 & 0 & 1 \end{bmatrix}$$	10	CO3

	yields point that lie on a circle.		
Q 9	Illustrate Point to point (PTP) and Contouring Operations in NC/CNC system.	**10**	**CO3**

<div align="center">SECTION-C
(2Qx20M=40 Marks)</div>

Q 10	Consider the assemblage of three springs as shown below. Calculate the displacement of the nodal points 2 and 3. Also calculate forces at node 1 and 4 taking force at 3 equal to 0.	**20**	**CO4**
Q 11	Component to be machined is shown in Fig. below. It is assumed that the pocket is through and hence only the outside is to be machined as a finish cut of the pocket. The tool to be used is a 20 mm diameter slot drill. Write CNC program. OR Explain the concept of floating datum and set point with reference to CNC part programming. What is their relationship? Explain how they	**20**	**CO5**

	are used in programming in ISO format.		