

Name:

Enrolment No:



## UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, May 2019

Programme Name: B Tech (Mechatronics)

Course Name : CAD/CAM

Course Code : GNEG 365

Nos. of page(s) : 02

Semester : VI

Time : 03 hrs

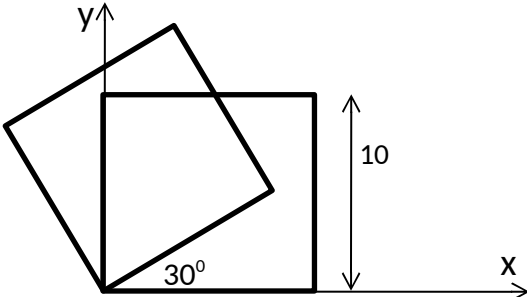
Max. Marks : 100

Instructions:

### SECTION A

S. No.		Marks	CO
Q 1	Briefly describe the role of engineering analysis process in the product design cycle.	5	CO1
Q 2	List important positive and negative aspects of using CAD/CAM.	5	CO1
Q 3	Differentiate between point-to-point, straight cut and contouring process in NC machine.	5	CO4
Q 4	What is interpolation?	5	CO4

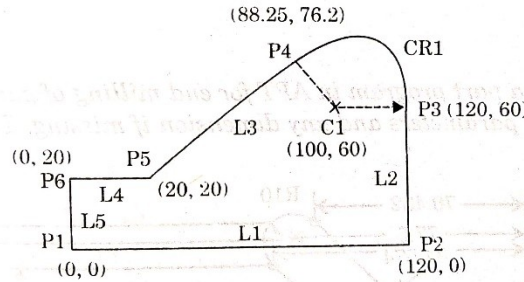
### SECTION B

Q 5	Differentiate between ACO (Adaptive control optimization) and ACC (Adaptive control constraints).	10	CO4
Q 6	<p>A square with an edge length of 10 units is located in the origin with one of the edges at an angle of <math>30^\circ</math> with the +X-axis. Calculate the new position of the square if it is rotated about the Z-axis by an angle of <math>30^\circ</math> in the clockwise direction.</p> 	10	CO2
Q 7	Show that transformation matrix for reflection about the line $Y = + X$ is equivalent to a reflection relative to X – axis followed by a counter-clockwise rotation of $90^\circ$ .	10	CO2
Q 8	Differentiate between (a) Drive surface (b) Check surface and	10	CO5

(c) Part surface

SECTION-C

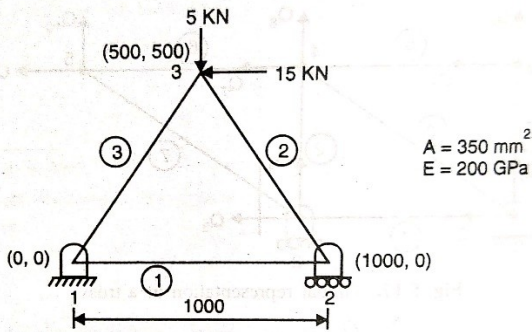
Q 9 For the plate shown in figure below, write an APT program for end milling of its edges. Thickness of the plate is 20 mm.



20

CO5

Q 10 Analyze the truss shown in the figure (i.e. to find displacement at joints, stresses in the members and reaction forces.)



OR

20

CO3

A stepped round bar is fixed at one end and a tensile force of 1000 N is applied at the other end as shown in fig below. Take elastic modulus,  $E = 2 \times 10^5 \text{ MPa}$ . Find the global stiffness matrix, displacement at nodes and reaction.

