

المادة : (PRE 609)CNC

الدرجة : 100

التاريخ : 18/8/2020

الزمن : ٣ ساعات



جامعة المنوفية

كلية الهندسة

قسم هندسة الإنتاج والتصميم الميكانيكي

الدراسات العليا (مستوى ٦٠٠)

Answer ALL Questions

Question No. One:

[50 Marks (10 Marks each)]

- Compare between NC and CNC machining.
- Sketch a physical diagram of both open and closed loop control systems.
- Explain (with help of sketches): G40, G41, G42, G43, and G44.
- List the advantages and limitations of using stepper motor as feed drives in CNC machine tools.
- What are the requirements of guide ways used in CNC machine tools? Explain with neat sketches working principles of any two antifriction guide ways.

Question No. Two:

[25 Marks]

The Aluminum alloy workpiece shown in Fig. (1), it is required to write a part program to machine the boundary, holes, and all shapes. The thickness of the workpiece is 20mm, the depth of milling contour is 3mm, the depth of rectangular pocket is 6mm, the depth of round and long pockets is 7mm, and the depth of the two threads is 12mm. Use Canned cycles and suitably assume any other required data.

Question No. Three:

[25 Marks]

Write a CNC part program for the 25mm- thickness brass workpiece shown in Fig. (2). It is required to machine the boundary, the rectangular pocket, the deep holes, and the T- and L- slots. The depth of the rectangular pocket is 6mm, the depth of T- and L- slots is 8mm, and the depths of holes is 15mm. Use canned cycles in your solution and suitably assume any other required data.

