EMT 5103 Computer Controlled Manufacturing

CAT 1 & 2

Instructions

1. This work is to be carried out individually
2. Similarities between your work and that of other students will be strictly scrutinized and penalized where copied work is submitted.
3. A PDF graph paper is attached for those who will not have access to one from the shop.
4. This CAT has been issued on **Monday**, **03/08/2020** and the deadline for submission is **Wednesday, 05/08/2020** at **midnight**.

Question

You are required to cut out a profile of the **TWO** initials of your Name from an Aluminum plate 5mm thick. The plate's length and width are 30cm by 30cm respectively. The cutting tool is an end mill of diameter is 5 mm, with two cutting edges. Due to the directionality of the stiffness of the machine structure, it is desired that the feed rate should not exceed 0.25 mm/tooth while machining the curved surface, and 0.4mm/tooth while machining the straight surface. The cutting speed for the material should be 80 m/min.

(a) Calculate the spindle speed required. (5Marks)

(b) Design and sketch the profile of the initials on a graph paper (5 Marks)
(***You are free to design the letters with any font. Make sure your design brings out your understanding of the CNC profile generation with codes.)**

(c) Write a numerical control code for the profile generation. (10 Marks)

(d) Write an APT code for the profile generation. (10 Marks)