SET A

UNIVERSITI KUALA LUMPUR
Malaysia France Institute

FINAL EXAMINATION
JULY 2010 SESSION

SUBJECT CODE	:	FFD 36103
SUBJECT TITLE	:	CNC TURRET PUNCHING PROGRAMMING
LEVEL	:	DIPLOMA
TIME / DURATION	:	3.00pm – 5.30pm (2.5 HOURS)
DATE	:	12 NOVEMBER 2010

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper CAREFULLY.

2. This question paper is printed on both sides of the paper.

3. Please write your answers on the answer booklet provided.

4. Answer should be written in blue or black ink except for sketching, graphic and illustration.

5. This question paper consists of TWO (2) sections. Section A and B. Answer all questions.

6. Answer all questions in English.

7. G- Code table is appended.

THERE ARE 4 PAGES OF QUESTIONS AND 1 PAGE OF G-CODE TABLE EXCLUDING THIS PAGE.

SECTION A (Total: 60 marks)

INSTRUCTION: Answer ALL questions.

Please use the answer booklet provided.

Question 1

(a)   *'Hydraulic system'* and *'Stripping'* are two safety devices that are equipped on Arcade 210 to protect the machine from damage. Describe how does the device function?

(8 marks)

(b)   What is the function of micro-joint in the program and the important of micro joint

(6 marks)

(c)   List out five (5) component parts of cutting tool at B station.

(5 marks)

(d)   Give two (2) functions of the *'MANUAL'* mode in the Turret punching programming.

(6 marks)

Question 2

(a)   Write eight (8) procedures to origins the CNC Turret Punching machine.

(8 marks)

(b)   Describe what will happen when *'Q'* is equal to 0 in Nibbling Arc in G code programming.

(6 marks)

(c)   What do you understand by the meaning of *'Dead Zone Area'* in Turret punching programming.

(5 marks)

(d)   Name the two (2) The methods used in calculating the designation of coordinate.

(6 marks)

Question 3

The required force to punch the worksheet must not exceed the force of machine Arcade *210*. The required punching force is obtained by the following formula:

$$P \, (ton) = \frac{A \, (mm) \times t \, (mm) \times r \, (kg/mm)}{1000}$$

Where P: Force required

A: Length of cut edge

t : Thickness of worksheet

r : Shearing strength of worksheet

With the information given:

a) Determine the tonnage that is needed to punch holes with a diameter of 40 mm on a mild steel plate with a thickness of 5 mm and a shearing strength of 40 kg/mm. Show your calculations.

(5 marks)

b) Determine the tonnage that is needed to punch a rectangular hole of the size of 25 mm x 25 mm on a stainless steel plate with a thickness of 3 mm and a shearing strength of 60 kg/mm. Show your calculations.

(5 marks)

SECTION B (Total: 40 marks)

INSTRUCTION: Answer all questions.

Please use the answer booklet provided

Question 1   (20 marks)

Base on the data given; write a G-Code program for the diagram below.

The G –Code program that you write must follow the sequence number, you are given the following tools;

1   Tool Round dia.10 mm T11 ;

2   Tool Square 20 x 20 mm T19 ;

3   Tool Rectangle 30 x 3mm T16; (Auto-index)
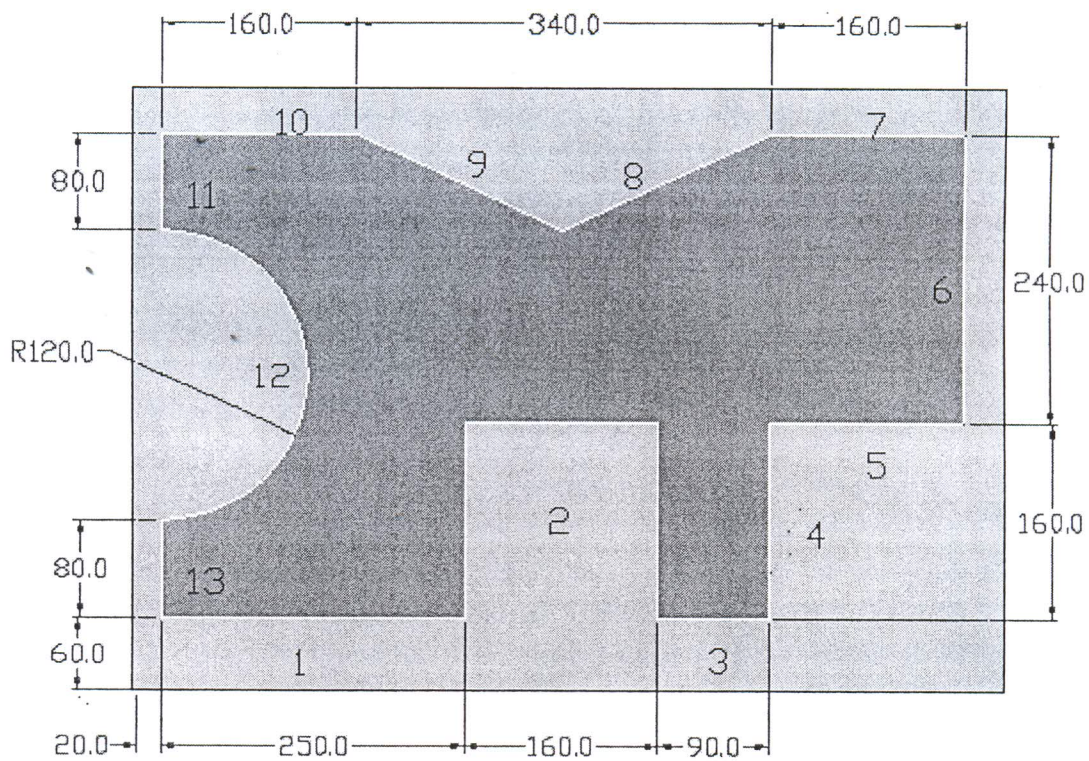

Figure 1: Base plate bracket

(25 marks)

Question 2

Base on the data given; write a G-Code program for the diagram below.

The G –Code program that you write must follow the sequence number. You are given the following tools;

1   Tool Round diameter 10 mm T4 ;
2   Tool Round diameter 20 mm T 12
3   Tool Square 10 x 10 mm T 18 ;
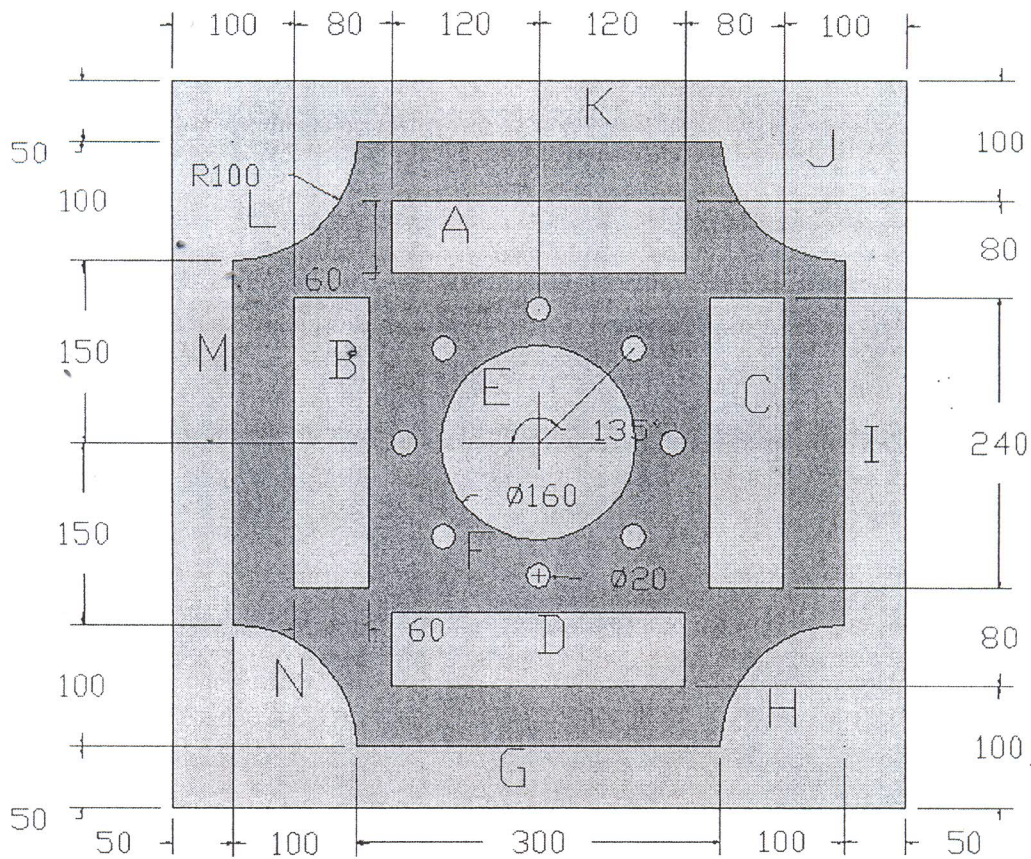4   Tool Rectangle 30 x 3mm T16; (Auto-index)

Figure 2: Base plate bracket

(25 marks)

END OF QUESTION

G 90 — Absolute Point
```
X : Value
Y : Value
T : Tool Number
C : Tool Angle
```

G 91 — Increment Point
```
X : Value
Y : Value
```

G 92 — Begin of Program
```
X : Machine Size
Y : Machine Size
```

G 93 — Offset Value
```
X : Value
Y : Value
```

G 72 — Pattern Origin
```
X : Value
Y : Value
```

G 50 — End of Program And Return to Origin

G 05 — Clamp Position
```
I = X    1st. Clamp
J = X    2nd. Clamp
K
```

G 06
```
A : Thickness 0.8 to 6.4
B : Material
    0  Steel
    1  Stainless
    2  Aluminium
```

G 75 — Multipart RecallX
```
W : Macro Number (u,v)
Q : Starting Corner
Q1 : Lower Left
Q2 : Lower Right
Q3 : Upper Left
Q4 : Upper Right
```


G 76 — Multipart RecallY
```
W
Q
```


G 98 — Multipart
```
X : Reference Value x
Y : Reference Value y
I : Pitch along x
J : Pitch along y
P : Qty. of Intervalles in x
K : Qty. of Intervalles in y
```


G 70 — Move Without Punch
```
X : Value
Y : Value
```

G 25 — Repositioning
```
X : Repos Value
(1st. one)
```
Repositionment automatique

G 27 — Repositioning
```
X : Repos Value
(2nd. one and following)
```

G 73 — Symmetry
```
X : Symmetry /x
Y : Symmetry /x
W : Macro Number (u,v)
Q :   Q2y   Q3x
      Q4/x,y
```

G 77 — Macro Rotation
```
X : Reference/x
Y : Reference/y
J : Rotation Angle
W : Macro Number (u,v)
```

G 26 — Holes on Circle
```
I : Radius +
J : Initial Angle +,-
Q : Qty. of holes
T : Tool Number
C : Tool Angle
```


G 28 — Holes on Line
```
I : Angle +,-
J : Angle +,-
K : Qty. of spaces
W : Distance between holes
T : Tool Number
C : Tool Angle
```


G 29 — Holes on Arc
```
I : Radius
J : Initial Angle +,-
P : Incremental Angle +,-
K : Qty. of Holes
T : Tool Number
C : Tool Angle
```


G 36 — Holes on grid/x
```
I : X Increment +,-
J : Y Increment +,-
P : Holes No./x
K : Holes No./y
T : Tool Number
C : Tool Angle
```


G 37 — Holes on grid/y
```
Same as G 36
```

G 66 — Shear Proof (Nibbling a Rectangle)
```
I : Cut Length
J : Angle (+,-)
P : Cut Width
Q : Tool Length +,-
D : Micro Join +,-
T : Tool Number
C : Tool Angle
```


G 67 — Square Cut
```
I : X Length +,-
J : Y Length +,-
K : Tool Width +
T : Tool Number
C : Tool Angle
```


G 68 — Nibbling Arc
```
Thickness < 3.2mm
I : Radius
J : Initial Angle +,-
K : Nibbling Angle
P : Position +,-
Q : Pitch (step)
```


G 78 — Nibbling Arc
```
Thickness > 3.2mm
Same as G 68
```


G 69 — Nibbling Line
```
Thickness < 3.2mm
I : Nibbling Length +
J : Angle +,-
P : Tool Diameter +,-
Q : Pitch (step)
T : Tool Number
C : Tool Angle
```


G 79 — Nibbling Line
```
Thickness > 3.2mm
Same as G 79
```