



SET B

UNIVERSITI KUALA LUMPUR
MALAYSIA FRANCE INSTITUTE

FINAL EXAMINATION
JANUARY 2011 SESSION

SUBJECT CODE : FFD 13403
SUBJECT TITLE : PRODUCTION PLANNING AND OPTIMIZATION OF MATERIAL
LEVEL : DIPLOMA
DURATION : 12.30pm – 2.30pm
(2 HOURS)
DATE / TIME : 05 MAY 2011

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 in Section A. For Section B, answer TWO (2) question only.
 6. Answer all questions in English
-

THERE ARE 6 PRINTED PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 40 marks)**INSTRUCTION: Answer ALL questions. Please use the answer booklet provided.**

1. State TWO (2) reasons why production planning is important?
(2 marks)
2. Factory engineers are most interested in, are the parts that can be made in the plant. State ONE (1) reason for it.
(2 marks)
3. What is meant by contract of phases?
(2 marks)
4. Why symbols are are used in the flow process? Draw and name FOUR (4) symbols used.
(3 marks)
5. What is "swinging" in terms of metal movement and draw an example.
(3 marks)
6. What is the significant function of the neutral axis?
(3 marks)
7. Draw a simple organization chart of a company, comprising of a manager, supervisor A and supervisor B. One worker is assisting the manager, two workers are under supervisor A, and the rest are working under supervisor B.
(3 marks)
8. What is nesting and why manufacturing companies uses this method for their production purposes? Give TWO (2) reasons.
(4 marks)

9. The following items were cut from the plate format size 1200 x 4.6 x 1500 at a price of RM350.00 per piece. The company will need 15 pieces of plate format for the project. If one piece of plate format can nest 6 pieces with 10% wastage;
- 9.1 Calculate the total numbers of the project piece.
- 9.2 Calculate the total cost, when 1 project piece is RM 230.35. A marked up price of 25% was also calculated for the total completed price.

(4 marks)

- 10 From the given diagram figure 1, explain the terms of shortening and elongation.

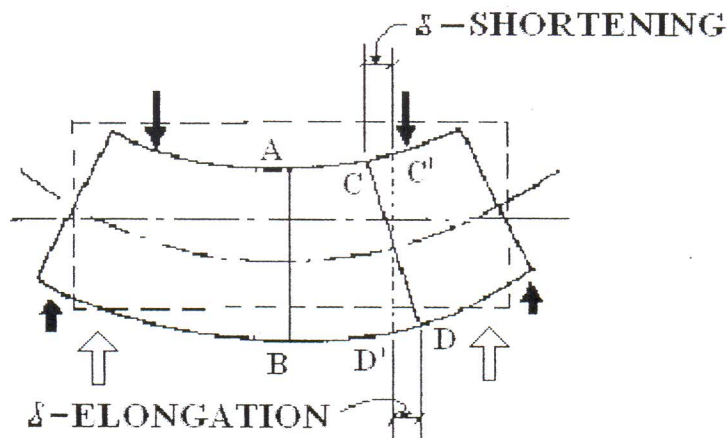


Figure 1 A Bending Process

(4 marks)

- 11 For the general design considerations as in figure 2, what is the distance from inner bend radius to the neutral axis for most material? What would the distance R, when you need to calculate a metal plate, $t = 5.6\text{mm}$ and $\text{IBR} = 12\text{mm}$?

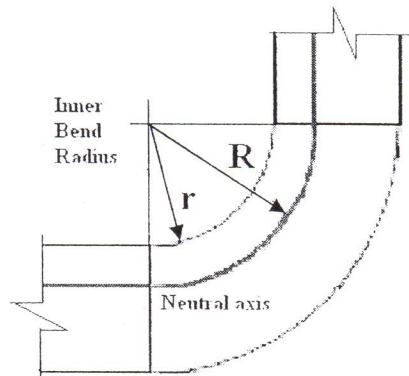


Figure 2 A Bend Metal Plate with Inner Bend Radius

(5 marks)

- 12 In terms of "bending process" the harder metal e.g. stainless steel, when bend to the desired angle and shape will and can encounter 'orange peel'. Explain this term. Give TWO (2) types of harder material plate that will experience this 'orange peel'. What precaution to be taken to overcome this situation?

(5 marks)

SECTION B (Total: 60 marks)

INSTRUCTION: Answer TWO (2) questions only.

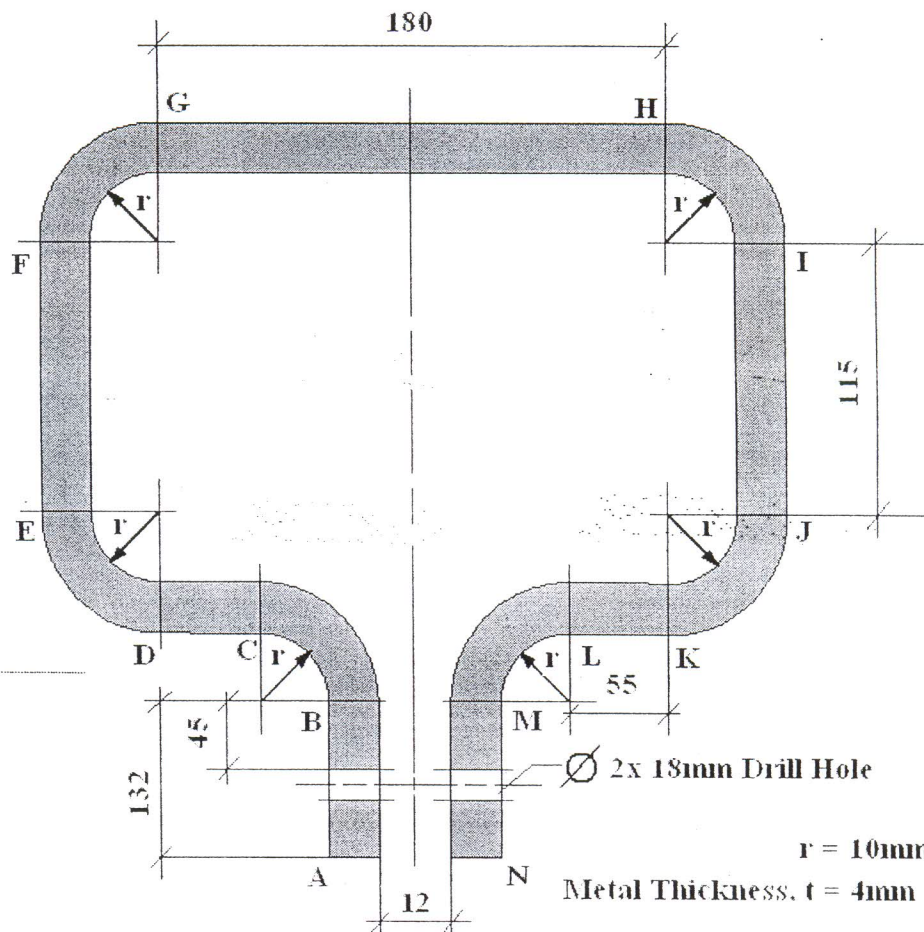
Please use the answer booklet provided.

Question 1

Calculate the total length of the Clip-O-Holder in Figure 3. Approximate values for the neutral line are given in Table 2. Take circumference = $2\pi R$ or πD

Metal thickness T (mm)	Approximate value of neutral line
0.315 to 1.016	$1/3$ plate thickness plus inside radius
1.219 to 2.346	$2/5$ plate thickness plus inside radius
3.251 to 7.620	$1/2$ plate thickness plus inside radius

Table 2 Neutral line value



(15 marks)

Figure 3 Clip-O-Holder

- b) Assuming that the overall dimension of the Clip-O-Holder is 910mm x 4.0mm x 250mm. You are to use the plate format size 1219mm x 4.0mm x 2438mm with the total number of Clip-O-Holder needed are 25 pieces. Calculate what is the best nesting layout for optimizing the plate?

(15 marks)

Question 2

- a) Bolts and nuts with washers will be used to fasten the pipe holder. The company needed to purchase the bolts and nuts. Assuming that one box contains 25 pieces bolt and nut. How many boxes of bolt and nut are required for the pipe holder installation?

(10 marks)

- b) A company was awarded to fabricate 800 pieces of pipe holder in January 2010 (see figure 4). It was then calculated that the company requires 15 pieces of plate format 1829mm x 4.5 x 6096mm. If the cost in February 2010 was RM580.45 per piece, what would the cost be in April 2010 since there was an increase of 6.5% per piece in price? What would be the total cost the company must bear?

(20 marks)

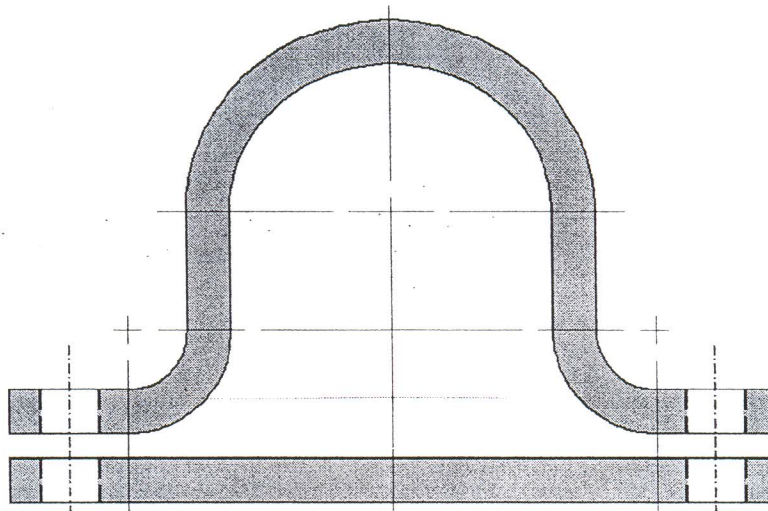


Figure 4 Pipe holder

Question 3

- a) Most manufacturers will optimize the use of raw materials. One method is by nesting. Explain what material nesting is and list FOUR (4) reasons why we must optimize the use of materials. (10 marks)
- b) The automatic nesting procedure has given the mostly approximate parts. This indicated that the degree of optimization is high. After analyzing the high wastage in figure 5, was greatly reduced to about 30...45%. Assuming company Alpha Plate Sdn Bhd., had in the first part six-month of 2009, plate usage of about 3.5 tons, was reduce to about 25% in the following six-month of the same year, without the increase in raw material. How much was the usage in the second part of 2009.

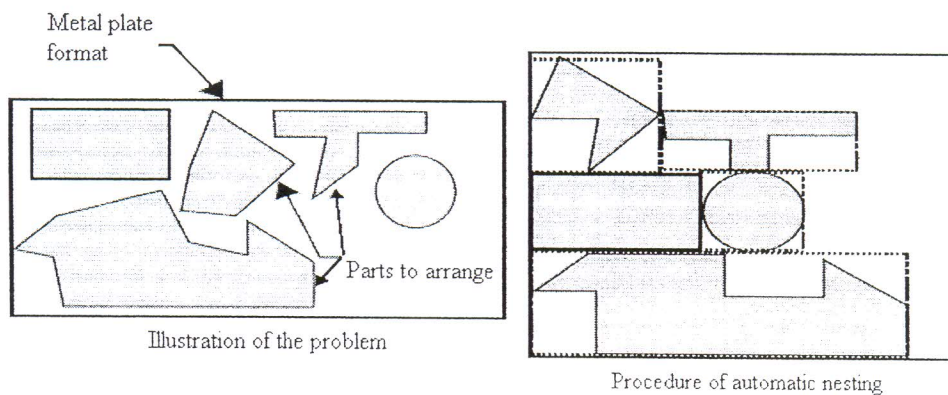


Figure 5 Organization of developments on a Plate format

(20 marks)

END OF QUESTION