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CONFIDENTIAL

SET A

UNIVERSITI KUALA LUMPUR
Malaysia France Institute

FINAL EXAMINATION

SEPTEMBER 2014 SESSION

SUBJECT CODE	:	**FGD21103**
SUBJECT TITLE	:	**MANUFACTURING TECHNOLOGY**
LEVEL	:	**DIPLOMA**
TIME / DURATION	:	**2.00 PM – 4.00 PM (2.5 HOURS)**
DATE	:	**5 JANUARY 2015**

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 4 questions only.**
6. **Answer all questions in English.**

THERE ARE 6 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 60 marks)

INSTRUCTION: Answer ALL questions.

Please use the answer booklet provided

Question 1

a) Cold Rolling process is done at room temperature with larger forces. Cold rolling produce smoother surface in compared with Hot Rolling. List the advantages of Hot Rolling process.

(3 marks)

b) The deformation process is to deform a material to a permanent shape and dimensions in at plastic state. Define about plastic state of metal.

(3 marks)

Question 2

a) Extrusion is done on metal to form a long continuous product. Window frame is an example of extrusion product. Explain briefly about Forward Extrusion.

(5 marks)

b) Referring to figure 1 below, Explain why there are defects in the rolling process?

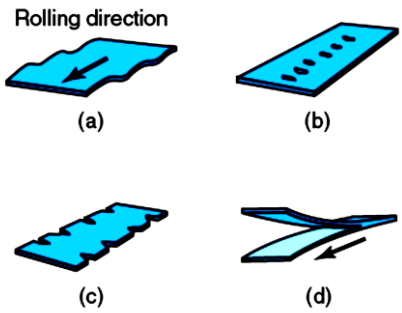

Figure 1: Defects in rolling (a) wavy defect (b) zipper crack (c) edge cracks (d) alligatoring

(5 marks)

Question 3

a) List five (5) advantages of Shielded Metal Arc Welding (SMAW)

(5 marks)

b) Distortion happens in fusion welding but Spot welding gives the most minimum distortion on the assembly by spot welding. Gives two (2) examples of applications where spot welding applied.

(5 marks)

Question 4

a) Explain about Isostatic pressing in Powder Metallurgy

(5 marks)

b) State three (3) advantages of Powder Metallurgy.

(5 marks)

Question 5

a) Explain briefly about the cooling rate in casting activity.

(5 marks)

b) Explain about the grain formation in casting compared to forging

(5 marks)

c) Referring to the figure 2 below, explain about the fluidity test for casting

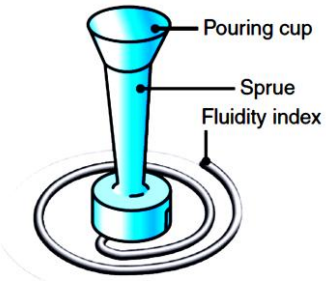

Figure 2**:** Fluidity test

(5 marks)

d) Draft angle is calculated and prepared on the pattern. Explain the function of the draft angle.

(5 marks)

e) When temperature of the molten metal drops to its freezing point, *latent heat of fusion* is given off. Describe briefly about latent heat.

(4 marks)

SECTION B (Total: 40 marks)

INSTRUCTION: Answer 4 questions ONLY.

Please use the answer booklet provided

Question 6

a) By referring to figure 3 below, differentiate between open die forging and closed die forging.

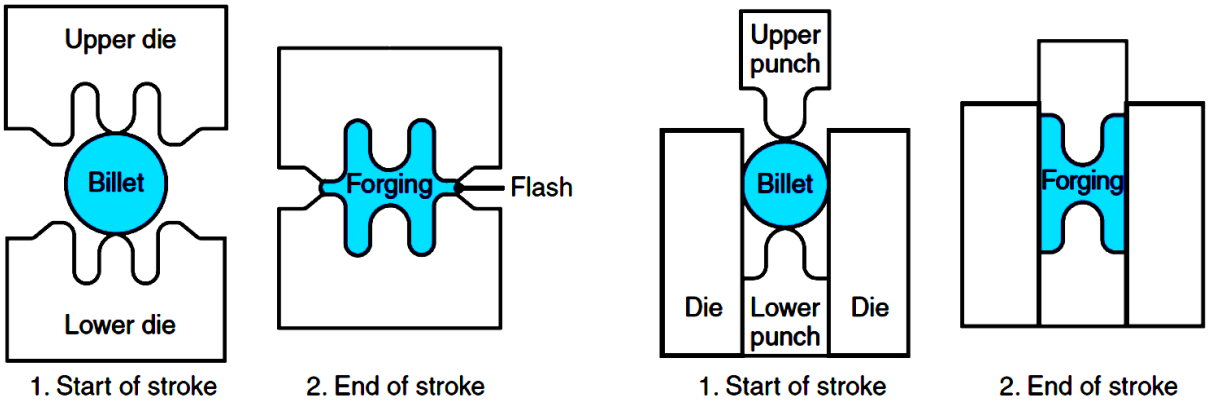

Figure 3: Open die forging and closed die forging

(4 marks)

b) Explain about the types of extrusion shown in figure 4 below.

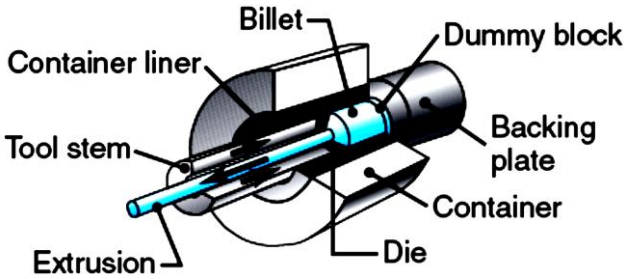

Figure 4**:** Extrusion of round bar

(6 marks)

Question 7

a) Forward polarity and reverse polarity is terms used in electric arc welding. Explain both terms.

(6 marks)

b) Named a process of generating powder for Powder Metallurgy

(4 marks)

Question 8

a) Figure 7 below displaying a component cast by Sand Casting. Name the missing label.

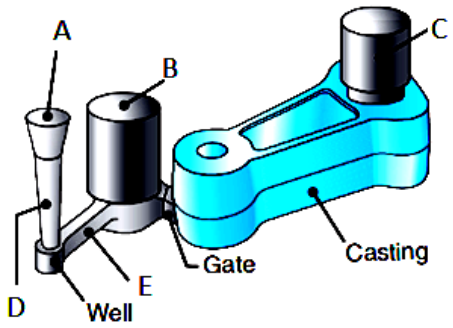

Figure 7**:** Product of cast component by sand casting

(10 marks)

Question 9

Table 1 below show the contraction of various metal. Referring to this table, does the shrinkage value of the metal related to the melting temperature of that particular metal? Please give an example to support your opinion.

Table 1**:** Solidification contraction or expansion for various metals

Volumetric Solidification Contraction or Expansion for Various Cast Metals			
Contraction (%)		Expansion (%)	
Aluminum	7.1	Bismuth	3.3
Zinc	6.5	Silicon	2.9
Al–4.5% Cu	6.3	Gray iron	2.5
Gold	5.5		
White iron	4–5.5		
Copper	4.9		
Brass (70–30)	4.5		
Magnesium	4.2		
90% Cu–10% Al	4		
Carbon steels	2.5–4		
Al–12% Si	3.8		
Lead	3.2		

(10 marks)

Question 10

Figure below shows one of the processes in blanking. Named this process and briefly explain its advantages.

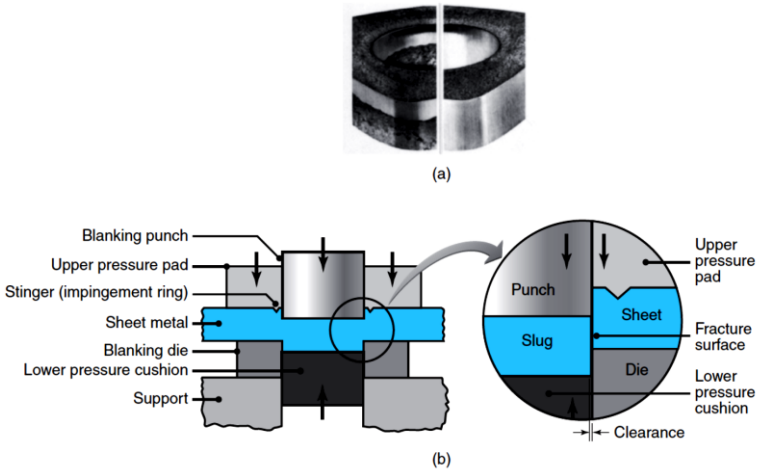

Figure 8: Blanking process

(10 marks)

END OF QUESTIONS