



UNIVERSITI KUALA LUMPUR
Malaysia France Institute

FINAL EXAMINATION
JANUARY 2014 SESSION

SUBJECT CODE : FGB 32103
SUBJECT TITLE : MANUFACTURING SCIENCE
LEVEL : BACHELOR
TIME / DURATION : 2.5 HOURS
DATE :

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 **THREE (3)** questions only.
6. Answer all questions in English.

THERE ARE FOUR (4) PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 40 marks)

INSTRUCTION: Answer ALL questions
Please use the answer booklet provided.

Question 1

- (a) Give the definition of *manufacturing process*.
(2 marks)
- (b) List three (3) examples of manufacturing process that applicable in producing metal based products.
(3 marks)
- (c) Give three (3) advantages of a virtual prototyping method as compared with a physical model prototyping method.
(3 marks)
- (d) Give three (3) advantages and disadvantages of cold forming process of metal.
(3 marks)
- (e) List five (5) computer – integrated manufacturing process elements.
(5 marks)
- (f) In sheet metal forming operations, friction condition at tool-metal interface plays an important role, give two (2) reasons why.
(4 marks)

Question 2

- (a) Give two (2) advantages and two (2) disadvantages of hot forming process of metal based products.
(4 marks)
- (b) List and explain the four (4) main functions of cutting fluid.
(4 marks)
- (c) Give two (2) suitable tool materials to be used to perform a machining process of a carbon steel cylinder and explain the reasons.
(6 marks)
- (d) Discuss on how to ensure the cost of manufacturing process can be reduced by considering the concepts of classical product design and concurrent engineering.
(6 marks)

SECTION B (Total: 60 Marks)**INSTRUCTION: Answer any THREE (3) questions only.****Please use the answer booklet provided.****Question 3**

- (a) Define the extrusion process and give three (3) types of extrusion. (10 marks)
- (b) Explain the basic operation of closed-die forging. (4 marks)
- (c) Describe three (3) common forging defects. (6 marks)

Question 4

- (a) Analyze the atomization process of producing metal powder. (10 marks)
- (b) State four (4) guides to the successful production of powder metal parts. (4 marks)
- (c) List six (6) components which can be manufactured by powder metallurgy. (6 marks)

Question 5

- (a) Explain why machining operation is necessary after casting and forming operation.

(8 marks)

- (b) Name four (4) desirable properties in a cutting tool material.

(4 marks)

- (c) Describe four (4) types of cutting tool material.

(8 marks)

Question 6

- (a) List out any three (3) differences between welding and soldering.

(6 marks)

- (b) Explain with an example the situation in which joining process become more essential compared to the other manufacturing processes.

(4 marks)

- (c) Describe about 'resistance welding process' and give two (2) different types of resistance welding operations.

(10 marks)

END OF QUESTION