



**UNIVERSITI KUALA LUMPUR  
Malaysia France Institute**

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**FINAL EXAMINATION  
JANUARY 2010 SESSION**

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**SUBJECT CODE** : FGB 40103  
**SUBJECT TITLE** : JIGS & FIXTURES DESIGN  
**LEVEL** : BACHELOR  
**TIME / DURATION** : 9.00am – 12.00pm  
( 3 HOURS )  
**DATE** : 06 MAY 2010

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**INSTRUCTIONS TO CANDIDATES**

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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 questions 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.
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**THERE ARE 5 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.**

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**SECTION A (Total: 40 marks)**

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

**Question 1**

- (a) Define the meaning of jigs and fixtures. (4 marks)
- (b) Explain the advantages of jigs and fixtures. (5 marks)
- (c) Analyze and justify the elements of jigs and fixtures. (6 marks)

**Question 2**

- (a) Identify the function of *table jig* and illustrate it into a figure. (5 marks)
- (b) Discuss and differentiate between *box jig* and *leaf jig*. (6 marks)
- (c) Analyze the jig in the Figure 1 below.

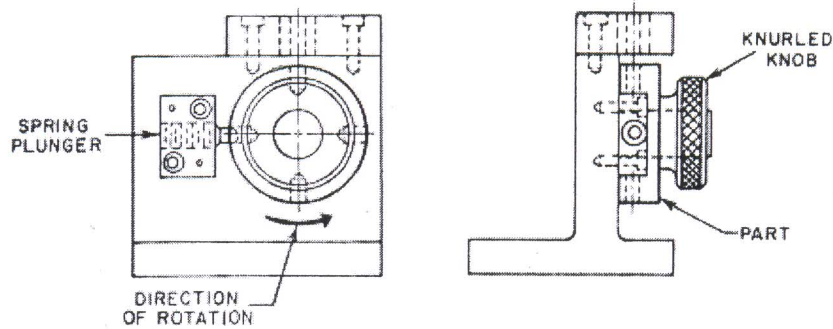


Figure 1

(3 marks)

**Question 3**

(a) Describe the basic rules of clamping.

(6 marks)

(b) Classify and analyze the clamp as shown in Figure 2.

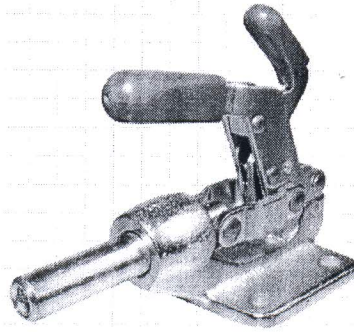


Figure 2

(5 marks)

**SECTION B (Total: 60 marks)**

**INSTRUCTION: Answer THREE (3) questions only.**

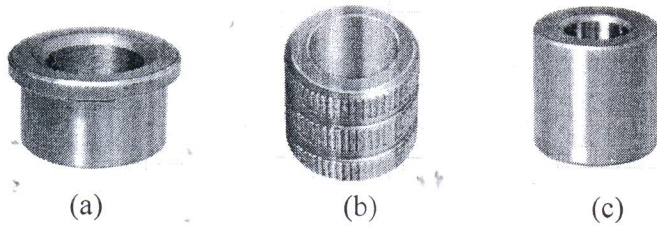
**Please use the answer booklet provided.**

**Question 4**

(a) Define the *Cast* tool bodies.

(3 marks)

(b) Analyze the use of each bushing (a), (b) and (c) below.



(6 marks)

(c) Discuss the function of lifting devices that use in developing jig or fixture as illustrated in Figure 3.

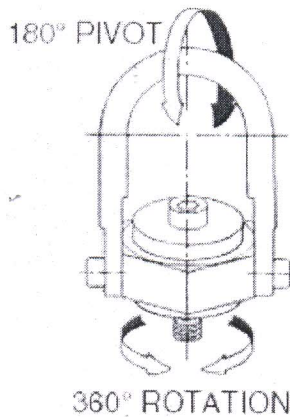


Figure 3

(6 marks)

(d) Illustrate instruction to install drill bushings correctly

(5 marks)

**Question 5**

- (a) Analyze the principles of design economy. (5 marks)
- (b) Develop comparative analysis of the alternatives below.

*Thousand guide plates must be milled to receive a locating block. The tool designer has determined three possible alternatives:*

1. Have a tool maker, who earns RM 12 per hour; mill the plates at a rate of 28 per hour.
2. Use limited tooling that costs RM 50 in the production department. The machine operator in this department, who earns RM 8 per hour, can make a part every 2 minutes.
3. Use more expensive tool that cost RM 200 but is capable of producing a part every 25 seconds. This would be done in the production department, where the machine operator earns RM 8 per hour.

Which alternative should the tool designer select as the most efficient and economical?

(15 marks)

**Question 7**

- (a) Describe the basic rules of locating. (8 marks)
- (b) List and analyze the methods of locating work from an internal diameter. (8 marks)
- (c) Why should the Round pin use together with Diamond pin as illustrated in Figure 4? Explain.

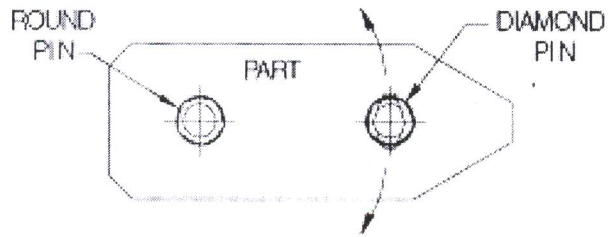


Figure 4

(4 marks)

END OF QUESTION