



**UNIVERSITI KUALA LUMPUR**  
**MALAYSIA FRANCE INSTITUTE**

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**FINAL EXAMINATION**  
**JANUARY 2014 SESSION**

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**SUBJECT CODE** : FWB 24202  
**SUBJECT TITLE** : DESTRUCTIVE TESTING  
**LEVEL** : BACHELOR  
**TIME / DURATION** : 2.5 HOURS  
**DATE** :

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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 question paper consists of **FIVE (5)** questions. Answer **FOUR (4)** questions only.
  6. Answer all questions in English.
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**THERE ARE 2 PRINTED PAGES OF QUESTIONS, EXCLUDING THIS PAGE**

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**INSTRUCTION: Answer FOUR (4) questions only.**

**Please use answer booklet provided.**

**Question 1**

- (a) Please explain briefly what the tensile test is all about.  
(5 marks)
- (b) Please draw or the sketch Stress-Strain Curve and indicate the following terms in your diagram i.e. modulus of elasticity, yield strength, Ultimate tensile test, 0.2% offset and plastic region.  
(10 Marks)
- (c) In engineering materials, please explain briefly the main difference between elastic and plastic deformation  
(10 Marks)

**Question 2**

- (a) Define the Ductile-brittle Transition Temperature (**DBTT**) in material science.  
(5 Marks)
- (b) Explain the meaning of Impact test. Some illustrations or sketches may be helpful in your explanation.  
(10 Marks)
- (c) What are the significant difference between Charpy and Izod Tests.  
(10 Marks)

**Question 3**

- (a) Briefly describe brittle and ductile fractures.(Sketches may be helpful in your explanation )  
(10 Marks)
- (b) In material science, define what Fracture Toughness is all about.  
(5 Marks)
- (c) Explain the **THREE (3)** modes of fractures. Some illustrations or sketches may be helpful in your explanation.  
(10 Marks)

**Question 4**

- (a) What is fatigue test? (5 Marks)
- (b) Explain the factors that affect the fatigue life? (10 Marks)
- (c) Describe the methods to prevent fatigue that occur in materials (10 Marks)

**Question 5**

Crack Tip Opening Displacement Test of (**CTOD**) is one of a family in fracture mechanics tests that measures the resistance of a material to grow a crack.

- (a) Define the stress intensity factor. (5 Marks)
- (b) Write down **FOUR (4)** main important Steps in **CTOD**. (10 Marks)
- (c) Explain the **THREE (3)** main **CTOD** fracture types. (10 Marks)

**END OF QUESTION**