Document No: UniKL MFI_SD_AC41
Revision No: 02
Effective Date: 01 December 2008

CONFIDENTIAL

SET A

UNIVERSITI KUALA LUMPUR

MALAYSIA FRANCE INSTITUTE

FINAL EXAMINATION

SEPTEMBER 2014 SESSION

SUBJECT CODE	:	**FWB24203**
SUBJECT TITLE	:	**DESTRUCTIVE TESTING**
LEVEL	:	**BACHELOR**
TIME / DURATION	:	**2.00 PM – 4.30 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 FIVE (5) questions. Answer FOUR (4) questions only.**
6. **Answer all questions in English.**

THERE ARE 2 PRINTED PAGES OF QUESTIONS, EXCLUDING THIS PAGE

INSTRUCTION: Answer FOUR (4) questions only.
Please use answer booklet provided.

Question 1

(a) Please sketch and label the important parameters of tensile test result on Strain-Strain curve

(8 marks)

(b) Please discuss briefly the types of material strength in tensile test

(7 marks)

(c) In engineering materials, please explain briefly the main difference between elastic and plastic deformation

(10 Marks)

Question 2

(a) What are the main objectives of impact test

(5 Marks)

(b) What are the main difference between Charphy and Izod Tests.

(10 Marks)

(c) Discuss the major factors that affect the results of impact test.

(10 Marks)

Question 3

(a) In material science, define what Fracture Toughness is all about.

(5 Marks)

(b) Briefly describe brittle and ductile fractures. Sketches may be helpful in your explanation

(10 Marks)

(c) Explain the **THREE (3)** modes of fractures. Some illustrations or sketches may be helpful in your explanation.

(10 Marks)

Question 4

(a) Describe the main objective of Fatigue Test.

(3 Marks)

(b) Describe the procedures to conduct the test. Explain why the preparation of test specimen is extremely critical especially its surfaces.

(8 Marks)

(c) Discuss the factors that affect the fatigue life.

(7 Marks)

(d) Explain the methods to prevent fatigue that occur in material

(7 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) Describe the purpose of Crack Tip Opening Displacement **(CTOD)** Test.

(5 Marks)

(b) Describe the procedures to conduct the **CTOD** test.

(10 Marks)

(c) Explain the fracture behavior of the **CTOD** as shown in **Figure 1** below. The crack tip opening is plotted against the load applied.

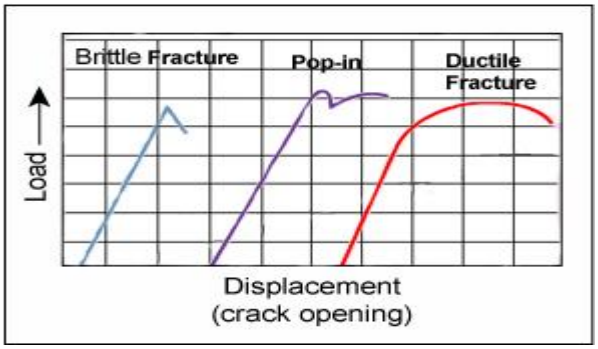

Figure 1

(10 Marks)

END OF QUESTION