UNIVERSITI KUALA LUMPUR
MALAYSIA FRANCE INSTITUTE

FINAL EXAMINATION
JANUARY 2011 SESSION

SUBJECT CODE : FWD22302
SUBJECT TITLE : WELDING DEFECT AND NON DESTRUCTIVE TEST
LEVEL : DIPLOMA
TIME / DURATION : 9.00am – 11.00am
(2.0 HOURS )
DATE : 14 MAY 2011

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 TWO (2) question only.
6. Answer all questions in English.

THERE ARE 9 PRINTED PAGES OF QUESTIONS, EXCLUDING THIS PAGE
SECTION A (Total: 60 marks)

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

Question 1

Figure 01 illustrates different cause of distortion due to welding. Identify type of contractions: (03 Marks)

(a) __________________________

(b) __________________________

(c) __________________________
Question 2
Figure 02 shows four different sequence of welding which tend to reduce distortion. These techniques are known as:

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Wedge placed approximately 45° ahead of weld
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Direction of contraction
Direction of welding
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Question 3
Welded joints need to be inspected at three stages:

- a-
- b-
- c-

Question 4
The purpose of testing of weld is to serve as a protection for:

- a-
- b-
- c-

Question 5
Inspection during welding include mainly:

- a-
- b-
- c-

Question 6
Test after welding are mainly of three types:

- a-
- b-
- c-
**Question 7**

From the NDT applications information given, identify and select the appropriate NDT method (A,B,C,D,E,F and G):

(14 Marks)

<table>
<thead>
<tr>
<th>NDT Method</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td>• used on nonporous materials</td>
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</tbody>
</table>
| **B**      | • ferromagnetic materials  
|           | • surface and slightly subsurface flaws can be detected |
| **C**      | • metals, alloys and electro conductors  
|           | • sorting materials  
|           | • surface and slightly subsurface flaws can be detected |
| **D**      | • metals, nonmetals and composites  
|           | • surface and slightly subsurface flaws can be detected  
|           | • used to determine thickness and mechanical properties |
| **E**      | • metals, nonmetals, composites and mixed materials  
|           | • used on pyrotechnics, resins, plastics, organic material, honeycomb structures, radioactive material, high density materials, and materials containing hydrogen |
| **F**      | • metals, nonmetals, composites and mixed materials  
|           | • used on all shapes and forms; castings, welds, electronic assemblies, aerospace, marine and automotive components |
| **G**      | • usually used on dense or thick material  
|           | • used on all shapes and forms; castings, welds, electronic assemblies, aerospace, marine and automotive components  
|           | • used where thickness or access limits X-ray generators |
Question 8
Non-destructive test (NDT) include: (name eight test):

a- 

b- 

c-

d-

e-

f-

g-

h-

(08 Marks)

Question 9
From the sketch /graphic about "Weld Defect" below (A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P) identify and names their defects:

A

B

C

D

(32 Marks)
SECTION B (Total: 40 marks)

INSTRUCTION: Answer TWO (2) questions only.
Please use the answer booklet provided.

Question 1

a) The visual examination of joint fit-up is given highest priority prior to welding. List eight (8) Items that may be considered prior examination of joint fit-up (08 marks)

b) Give SIX (6) typical discontinuities found in weldment. (06 marks)

c) Figure 1 above shows voids in weld metal due to entrapped gas, these voids are considered defect in welding. Identify the defect shown and list three (3) possible causes of this defect in SMAW process.

![Figure 1](image)

Question 2

(a) What are the differences between Crater Star and Crater Pipe? (04 marks)

(b) Explain what is weld discontinuity? (06 marks)

(c) Explain the procedure used in Dye Penatrent Testing (DPI). (10 marks)
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Question 3

(a) Explain what is Annealing process? (6 marks)

(b) What is the function of TRANSUDER in Ultrasonic (UT). (4 marks)

(c) List down FOUR (4) advantages and Four (4) disadvantages of Radiography Testing (RT). (10 marks)

END OF QUESTION