

**CONFIDENTIAL**

SET B



**UNIVERSITI KUALA LUMPUR**  
MALAYSIA FRANCE INSTITUTE

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**FINAL EXAMINATION**  
**JULY 2010 SESSION**

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**SUBJECT CODE** : FWD 22302  
**SUBJECT TITLE** : WELD DEFECTS AND NDT  
**LEVEL** : DIPLOMA  
**TIME / DURATION** : 12.30 pm – 3.00 pm  
( 2.5 HOURS )  
**DATE** : 13 NOVEMBER 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 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.

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THERE ARE <sup>9</sup>~~10~~ PRINTED PAGES OF QUESTIONS, EXCLUDING THIS PAGE

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

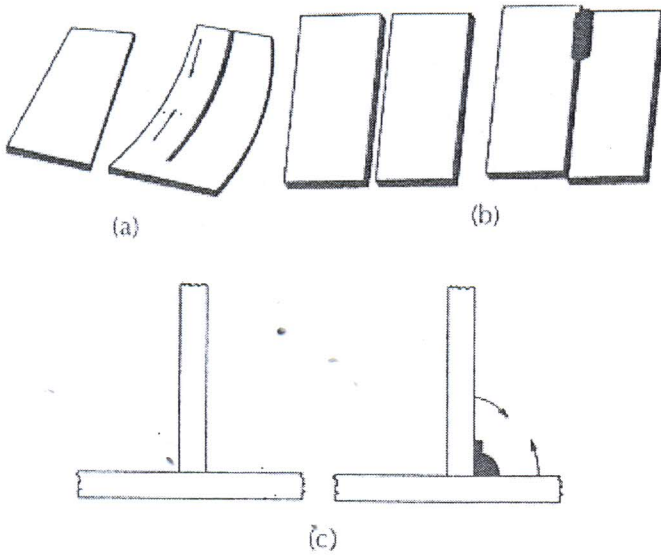
**INSTRUCTION: Answer ALL questions.**

**Please use the answer booklet provided.**

**Question 1**

Figure 01 illustrates different cause of distortion due to welding. Identify type of contractions:

(03 Marks)



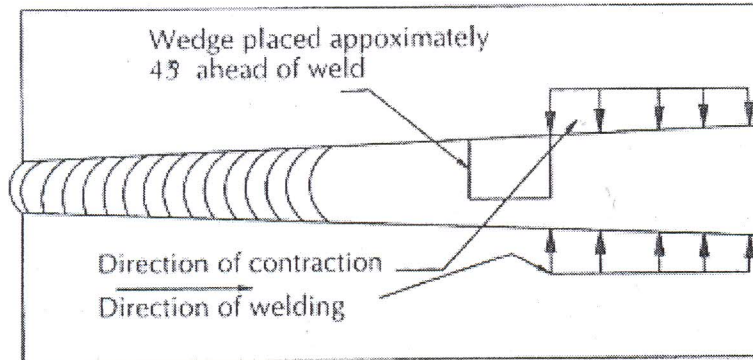
(a) \_\_\_\_\_

(b) \_\_\_\_\_

(c) \_\_\_\_\_

**Question 2**

Figure 02 shows four different sequence of welding which tend to reduce distortion. These techniques are known as: (01 Marks)



**Question 3**

Welded joints need to be inspected at three stages:

(03 Marks)

- a- \_\_\_\_\_
- b- \_\_\_\_\_
- c- \_\_\_\_\_

**Question 4**

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

(03 Marks)

- a- \_\_\_\_\_
- b- \_\_\_\_\_
- c- \_\_\_\_\_

**Question 5**

Inspection during welding include mainly:

(03 Marks)

- a- \_\_\_\_\_
- b- \_\_\_\_\_
- c- \_\_\_\_\_

**Question 6**

Test after welding are mainly of three types:

(03 Marks)

- a- \_\_\_\_\_
- b- \_\_\_\_\_
- c- \_\_\_\_\_

**Question 7**

Non –destructive test (NDT) include : (name eight test):

(08 Marks)

- a- \_\_\_\_\_
- b- \_\_\_\_\_
- c- \_\_\_\_\_
- d- \_\_\_\_\_
- e- \_\_\_\_\_
- f- \_\_\_\_\_
- g- \_\_\_\_\_
- h- \_\_\_\_\_

**Question 8**

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

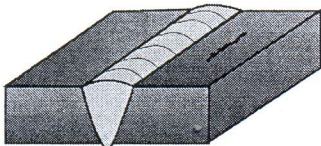
(14 Marks)

NDT Applications		
	NDT Method	Applications
A		<ul style="list-style-type: none"> <li>used on nonporous materials</li> </ul>
B		<ul style="list-style-type: none"> <li>ferromagnetic materials</li> <li>surface and slightly subsurface flaws can be detected</li> </ul>
C		<ul style="list-style-type: none"> <li>metals, alloys and electro conductors</li> <li>sorting materials</li> <li>surface and slightly subsurface flaws can be detected</li> </ul>
D		<ul style="list-style-type: none"> <li>metals, nonmetals and composites</li> <li>surface and slightly subsurface flaws can be detected</li> <li>used to determine thickness and mechanical properties</li> </ul>
E		<ul style="list-style-type: none"> <li>metals, nonmetals, composites and mixed materials</li> <li>used on pyrotechnics, resins, plastics, organic material, honeycomb structures, radioactive material, high density materials, and materials containing hydrogen</li> </ul>
F		<ul style="list-style-type: none"> <li>metals, nonmetals, composites and mixed materials</li> <li>used on all shapes and forms; castings, welds, electronic assemblies, aerospace, marine and automotive components</li> </ul>
G		<ul style="list-style-type: none"> <li>usually used on dense or thick material</li> <li>used on all shapes and forms; castings, welds, electronic assemblies, aerospace, marine and automotive components</li> </ul>

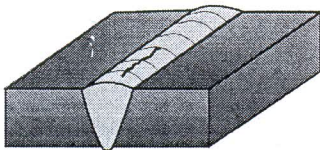
		<ul style="list-style-type: none"><li>used where thickness or access limits X-ray generators</li></ul>
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**Question 9**

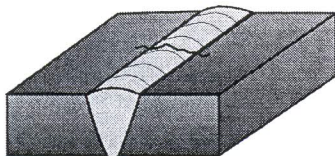
From the sketch /graphic about "Weld Defect" below (A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P) identify and names their defects: (32 Marks)



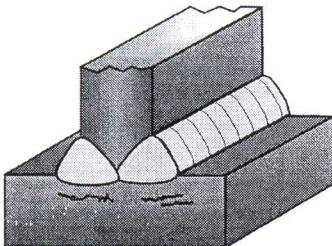
A \_\_\_\_\_



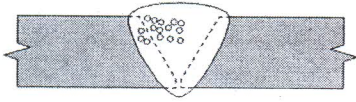
B \_\_\_\_\_



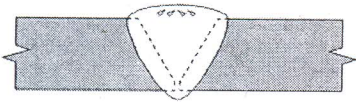
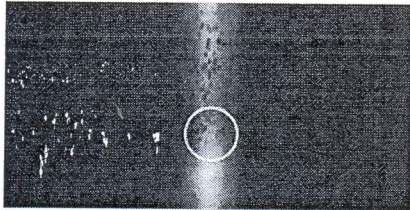
C \_\_\_\_\_



D \_\_\_\_\_



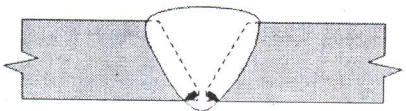
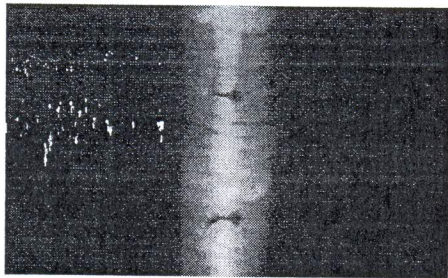
E \_\_\_\_\_



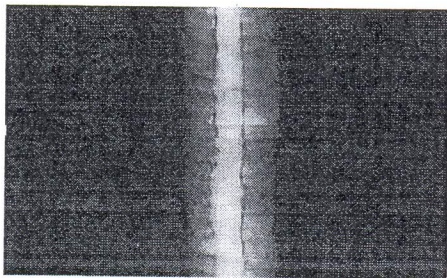
F \_\_\_\_\_

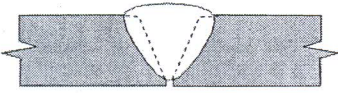


G \_\_\_\_\_

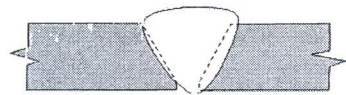
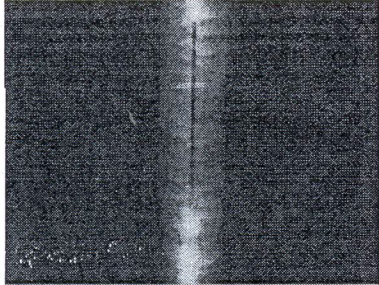


H \_\_\_\_\_

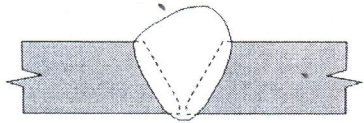
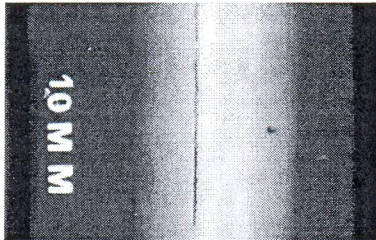




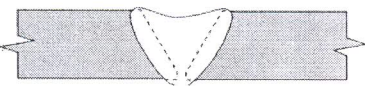
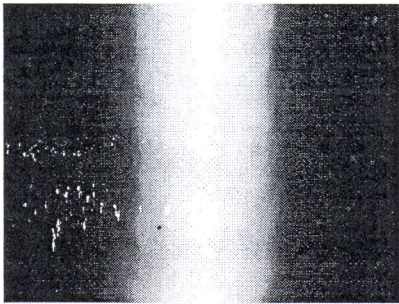
I \_\_\_\_\_



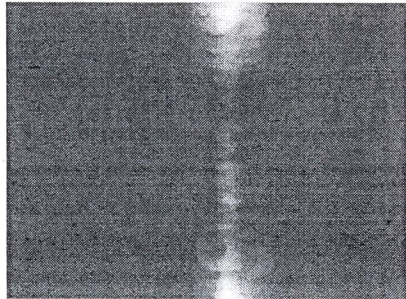
J \_\_\_\_\_

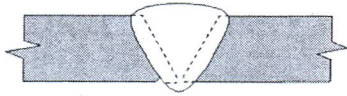


K \_\_\_\_\_

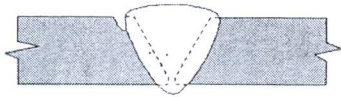
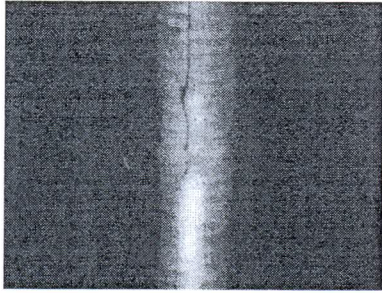


L \_\_\_\_\_

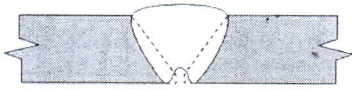
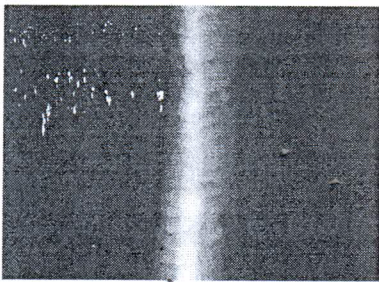




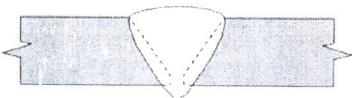
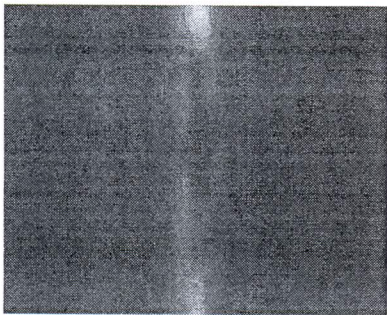
M \_\_\_\_\_



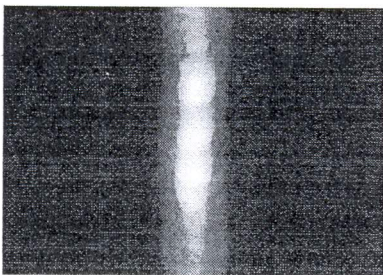
N \_\_\_\_\_



O \_\_\_\_\_



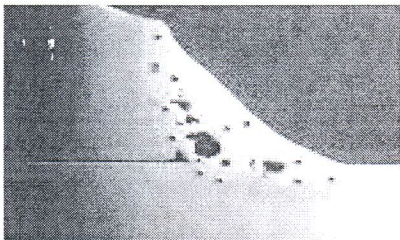
P \_\_\_\_\_





**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. (06 marks)

**Figure 1****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). (10marks)

**Question 3**

- (a) Explain what is Annealing process? (6 marks)
- (b) What is the function of **TRANSDUCER** in Ultrasonic (UT) (4marks)
- (c) List down **FOUR (4)** advantages and Four (4) disadvantages of Radiography Testing (RT). (10marks)

**END OF QUESTION**