



**UNIVERSITI KUALA LUMPUR
MALAYSIA FRANCE INSTITUTE**

**FINAL EXAMINATION
JANUARY 2014 SESSION**

SUBJECT CODE : FWB 42603
SUBJECT TITLE : WELDING RECLAMATION
LEVEL : BACHELOR
TIME / DURATION : 2.0 HOURS
DATE :

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 3 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

(Total: 100 Marks)

INSTRUCTION: Answer four (4) questions only.

Please use the answer booklet provided.

Question 1

- (a) Explain the important features of weld reclamation. (4 Marks)
- (b) If the item to be repaired was not welded previously then a special investigation may be necessary to determine weldability. Describe **THREE (3)** tests that can determine the degree of weldability of materials. (15 Marks)
- (c) When attempting weld repair, assessing the nature of failure before repair is required. List **THREE (3)** major categories of failure. (6 Marks)

Question 2

- (a) Hardfacing is the application of a hard, wear-resistant material to the surface of a workpiece. Explain the use of hardfacing in maintenance and production. (7 marks)
- (b) State the cause of fatigue wear and how does it occurs in the work environment. (12 Marks)
- (c) In the maintenance of wear surface, underlaying is often used before hardfacing. Describe the process and give type of filler metal used to underlay carbon steel. (6 Marks)

Question 3

- (a) In the production of high-strength steels, the alloying elements (C, Mn, Ni, Cr, Mo, V, Nb, Cu, Ti, B, etc.) are added. Identify the important of the alloying elements in the production of high strength steels.
(5 marks)
- (b) State **THREE (3)** factors that often cause cracks in the weld metal and the heat-affected zone of the high-strength steel.
(9 Marks)
- (c) In welding high-strength steels, most welding joints are assembled with similar and dissimilar types of steel. Recognize and recommend the best type of electrode for the shielded metal arc welding process in welding of high strength steels.
(10 Marks)

Question 4

- (a) State the advantage of stainless steels that are used in various applications such as kitchen utensils, tableware, industrial machinery (for food processing, petroleum refinery, textile, fossil power, and nuclear power), building materials, and automobile components.
(6 marks)
- (b) Welding of austenitic stainless steel is liable to cause greater distortion. Write the appropriate preventive measures taken against welding distortion when welding sheet metals of austenitic stainless steel.
(9 Marks)
- (c) Describe the proper technique in welding of martensitic stainless steels Types 410 and 403 containing 13%Cr.
(10 Marks)

Question 5

- (a) Copper alloys in which zinc is the major alloying element are generally called brasses. Describe the technique in avoiding zinc fumes produce during welding operation and the risk in using such technique.
(7 Marks)
- (b) Copper alloys are susceptible to hot cracking at solidification temperatures. Discuss how we could minimize hot cracking in welding of copper alloys.
(7 Marks)
- (c) Write the factors that affect the weldability of aluminium and its alloy.
(10 Marks)

END OF QUESTION