



**UNIVERSITI KUALA LUMPUR  
MALAYSIAN INSTITUTE OF INDUSTRIAL TECHNOLOGY**

---

**FINAL EXAMINATION  
JANUARY 2016 SEMESTER**

---

**COURSE CODE : JQD 31303**  
**COURSE TITLE : FUNDAMENTALS OF INSPECTION TECHNOLOGY**  
**PROGRAMME LEVEL : DIPLOMA**  
**DATE : 23 MAY 2016**  
**TIME : 2.30 PM – 5.30 PM**  
**DURATION : 3 HOURS**

---

**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. This question paper consists of TWO (2) sections.**
  - 4. Answer ALL questions in Section A. Choose TWO (2) questions in section B.**
  - 5. Please write your answers on the answer booklet provided.**
  - 6. Please answer all questions in English only.**
- 

**THERE ARE 4 PAGES OF QUESTIONS EXCLUDING THIS PAGE.**

---

**SECTION A (Total: 60 marks)****INSTRUCTION: Answer ALL questions.****Please use the answer booklet provided****Question 1**

- (a) List the **THREE (3)** types of surface defect. (3 marks)
- (b) Differentiate the terms of Corner Joint and Fillet Weld. (6 marks)
- (c) List the **FIVE (5)** defects can be inspect using visual inspection method (5 marks)
- (d) Construct the weld region including heat affected zone(HAZ),base metal and fusion zone with the types of defects below
- i. Root crack and lack of fusion on U groove butt joint. (3 marks)
- ii. Concave cap and toe crack on single V groove butt joint (3 marks)

**Question 2**

- (a) Explain the procedures of post cleaning in dye penetration process (4 marks)
- (b) Identify **SIX (6)** types of corner joint. (6 marks)
- (c) List the instrument used in dye penetration process. (4 marks)
- (d) Identify **THREE (3)** non-destructive testing method can be used for inspect toe crack. (6 marks)

**Question 3**

- (a) Explain the **THREE (3)** possible causes for overlap defect. (3 marks)
- (b) Give **SEVEN (7)** defects cause current too high. (7 marks)
- (c) Welds can be done in all four positions such as horizontal, flat, vertical and overhead. Explain the characteristics of horizontal position and overhead position. (5 marks)
- (d) Construct the following welding defects on the dissimilar weldment of AA6351 and AA6061
- i. Root crack (1 marks)
  - ii. Root undercut (1 marks)
  - iii. Underfill (1 marks)
  - iv. Face undercut (1 marks)
  - v. Surface breaking Porosity (1 marks)

**SECTION B (Total: 40 marks)****INSTRUCTION: Choose TWO (2) questions only.****Please use the answer booklet provided****Question 1**

- (a) Draw linear porosity and cluster porosity defect on the square butt joint. (5 marks)
- (b) Explain the procedure for inspect defect using magnetic particle inspection method. (4 marks)
- (c) Describe right steps of dye penetration testing for examining defect on AA5083 welded joint. (5 marks)
- (d) The material used in this experiment was 6061 aluminum alloy with a thickness of 10 mm. The material was cut into several pieces with widths of 100 mm according to the standard length of ASTM E8M 04. Grooving was done using a milling machine with an angle of 40 degree for each cutting part, according to the specification of a single V-groove joint. Construct the workpiece of 6061 aluminum alloy after complete grooving process. (6 marks)

**Question 2**

- (a) List **THREE (3)** apparatus used in eddy current testing method. (3 marks)
- (b) List **TWO (2)** types of welding position (4 marks)
- (c) Decide which type of non-destructive testing that can be used to obtain the information required below:
- i. Inspect burn-through defect on AA5083 joint (2 marks)
  - ii. Inspect arc strike defect on AA 6061 joint (2 marks)
  - iii. Measure dimension of workpiece AA6082 (2 marks)
  - iv. Inspect surface irregularity on welded joint of AA6351 (2 marks)
- (d) Select the best non-destructive testing method for inspect overlap defect and give your reason. (5 marks)

**Question 3**

- (a) List **SIX (6)** types of butt joint. (6 marks)
- (b) List **FOUR (4)** destructive test can be used to evaluate the weldment. (4 marks)
- (c) Explain the procedure for measure micro-hardness of weldment using Vicker hardness tester. (4 marks)
- (d) Construct the principle of gas metal arc welding process. (6 marks)

**END OF EXAMINATION PAPER**

