



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

**FINAL EXAMINATION
JANUARY 2016 SEMESTER**

COURSE CODE : JFB 10503
COURSE TITLE : WELDING & METAL FABRICATION
PROGRAMME LEVEL : BACHELOR
DATE : 26 MAY 2016
TIME : 9.00 AM – 12.00 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 THREE (3) questions in section B.
 5. Please write your answers on the answer booklet provided.
 6. Please answer all questions in English only.
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THERE ARE 3 PAGES OF QUESTIONS EXCLUDING THIS PAGE.

SECTION A (Total: 40 marks)**INSTRUCTION: Answer ALL questions.****Please use the answer booklet provided.****Question 1**

In the workshop, there are many types of hazardous specific to welding and cutting. In addition, there may be other hazards of a more general nature present in the fabrication environment. All potential hazards need to be identified, measured (where appropriate) and assessed. Remedial measures must be put in place wherever necessary.

- (a) Describe FIVE (5) common hazards in Shielded Metal Arc Welding (SMAW) processes.
(10 marks)
- (b) Identify FIVE (5) types of Personal Protective Equipment (PPE) that can be used when welding processes.
(10 marks)

Question 2

The defects in the weld can be defined as irregularities of weld metal produced due to incorrect welding parameters, wrong welding procedures and wrong combination of filler metal and parent metal.

- (a) With the aid of a diagram, explain the process of Gas Tungsten Arc Welding (GTAW)
(10 marks)
- (b) Identify FIVE (5) common defects with prevention in GTAW process.
(10 marks)

SECTION B (Total : 60 marks)**INSTRUCTION : Answer THREE (3) questions.****Please use the answer booklet provided.****Question 1**

Submerged Arc Welding (SAW) and Gas Metal Arc Welding (GMAW) are types of welding that uses a welding power supply to create an electric arc between an electrode and the base material to melt the metals at the welding point.

(a) Classify **FIVE (5)** advantages of using Submerged Arc Welding (SAW).
(10 marks)

(b) Examine **FIVE (5)** limitations of using Gas Metal Arc Welding (GMAW)
(10 marks)

Question 2

Oxy-fuel Welding (OFW) and Oxy-Fuel Cutting (OFC) are processes that use fuel gases and oxygen to weld and cut metals, respectively.

(a) Using any suitable diagram, compare the differences between welding setup and cutting setup for Oxy-fuel Gas Welding application.
(16 marks)

(b) Determine **FOUR (4)** types of cutting flame for Oxy-fuel Cutting (OFC).
(4 marks)

Question 3

(a) Identify the type and the polarity of welding current between Shielded Metal Arc Welding (SMAW) and Gas Metal Arc Welding (GMAW), and identify **THREE (3)** common output currents for Arc Welding.
(7 marks)

- (b) With the aid of a block diagram, explain the current polarity of the power sources when implementing an inverter technology.

(13 marks)

Question 4

Welding electrodes are metal wires with baked on chemical coatings. It is made out of materials with a similar composition to the metal being welded. The coating protects the metal from damage, stabilizes the arc, and improves the weld. There are a variety of factors that go into choosing the right electrode for welding processes.

- (a) Discuss **THREE (3)** different group of welding electrodes for Shielded Metal Arc Welding (SMAW).

(10 marks)

- (b) A filler metal is a metal added in the making of a joint through welding, brazing, or soldering. Explain **FIVE (5)** factors to consider in selecting appropriate filler metal.

(10 marks)

END OF EXAMINATION PAPER