



**UNIVERSITI KUALA LUMPUR  
Malaysia France Institute**

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**FINAL EXAMINATION  
JANUARY 2014 SESSION**

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**SUBJECT CODE : FFD 12402**

**SUBJECT TITLE : FUNDAMENTAL OF METAL FABRICATION  
PROCESSES**

**LEVEL : DIPLOMA**

**TIME / DURATION :  
( 2 HOURS )**

**DATE :**

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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) questions only.**
  - 6. Answer all questions in English.**
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**THERE ARE 7 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**

- (a) Name **TWO (2)** examples of work carried out of by a metal fabricator in “heavy” fabrication category. (2 marks)
- (b) State **TWO (2)** examples of work carried out of by a metal fabricator in “light” fabrication category. (2 marks)
- (c) According to Figure 1 below, explain briefly the tasks of Metal Fabrication Technologist. (2 marks)

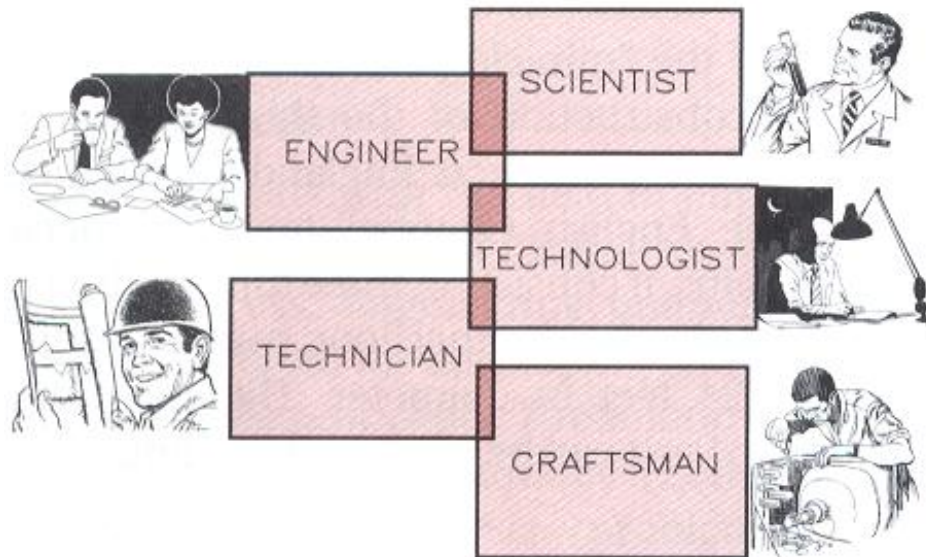


Figure 1: Occupational Level

- (d) State **TWO (2)** duties of a “Boilermaker”. (4 marks)

**Question 2**

- (a) Give **FOUR (4)** types of personal protective equipment while arc welding work is performed. (4 marks)
- (b) One of the heavy materials handling method used in Fabrication & Joining Warehouse is Overhead crane. Explain briefly the safety precautions of Overhead Crane while transporting heavy materials. (5 marks)
- (c) State **TWO (2)** types of equipments used while transporting light material such as sheet metal from Fabrication & Joining Warehouse to Metal Fabrication Workshop, (4 marks)
- (d) The way of performing work on the manufacturing product at workstations such as welding may contribute to high risk if not carried out properly. List **TWO (2)** types of high risk during welding work is performed. (4 marks)
- (e) List **FOUR (4)** safety procedures during carrying out the Press Brake Bending Machine. (4 marks)
- (f) Give **FIVE (5)** safety procedures while operating the Plate Rolling Machine. (5 marks)

**Question 3**

- (a) In Fabrication and Joining Warehouse, there are several types of material forms are stocked. Name and sketch **TWO (2)** of them. (4 marks)
- (b) Iron will be melted by the furnaces before it becomes steel ingots. Name each type of furnaces. (4 marks)
- (c) Complete the label 1 to 6 as indicated in Figure 2 for a GMAW process. (6 marks)

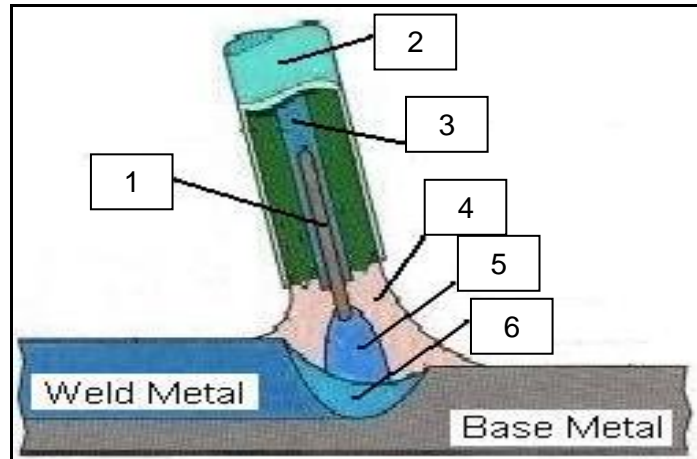


Figure 2: Gas Metal Arc Welding (GMAW)

(e) Name the numbers 1 to 7 as provided in Figure 3 for a GTAW process.

(7 marks)

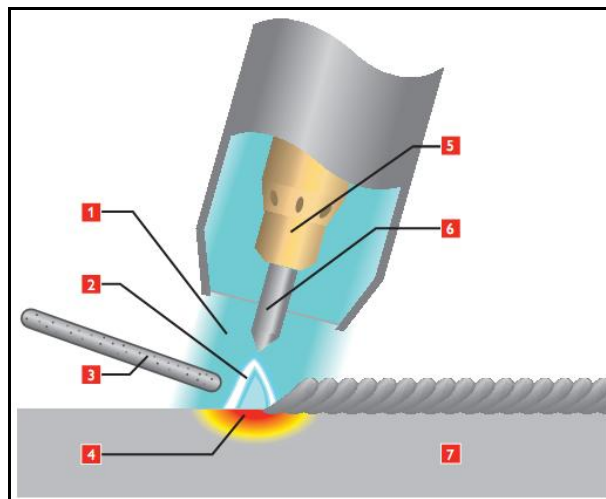


Figure 3: Gas Tungsten Arc Welding (GTAW)

(f) Explain briefly the SMAW process as shown in Figure 4.

(3 marks)

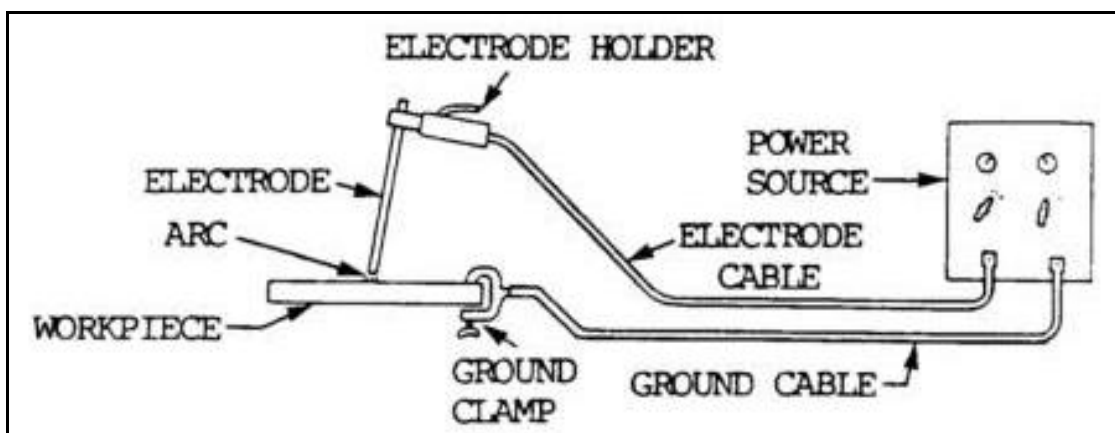


Figure 4: Shielded Metal Arc Welding (SMAW)

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

Referring to the Figure 5, answer the following questions:



Figure 5: Manifold Duct

- (a) List down **TWO (2)** types of cutting processes that involved in fabricating the product and please specify their terms briefly. (6 marks)
- (b) Explain briefly what should the fabricator do prior rolling a Manifold Duct Cylinder? (3 marks)
- (c) Explain briefly how to ensure the roundness of a Manifold Duct Cylinder? (3 marks)
- (d) Propose **ONE (1)** type of arc welding process and its shielding gas used for jointing its seam if a Manifold Duct is made by stainless steel. (3 marks)
- (e) Explain briefly the methods of operation in workholding for riveting if a Manifold Duct is jointed by rivet. (5 marks)

## Question 2

Refer to Figure 6 and answer the following questions:



Figure 6: Steel Structure Connections

- (a) State **TWO (2)** types of cutting processes that involved in preparing a Baseplate and define their terms briefly. (6 marks)
- (b) Name and sketch **TWO (2)** types of devices that are commonly used in holding parts for fitting up the **Joint B**. (6 marks)
- (c) State the types of joins for **Joint A** and **Joint B**. (2 marks)
- (d) Name and sketch **ONE (1)** type of device that is commonly used in aligning holes and holding parts for fitting up the **Joint A**. (2 marks)
- (e) If the Steel Structure Connection is made by low carbon steel, propose **ONE (1)** type of arc welding process and its shielding gas used for jointing the **Joint B**. (4 marks)

**Question 3**

- (a) Illustrate and explain briefly the basic principle of stiffening. (5 marks)
- (b) State the methods of imparting stiffness to sheet metal. (3 marks)
- (c) According to Figure 7, identify and explain briefly the type of stiffener that is applied on the Joint A of the Duct. (5 marks)

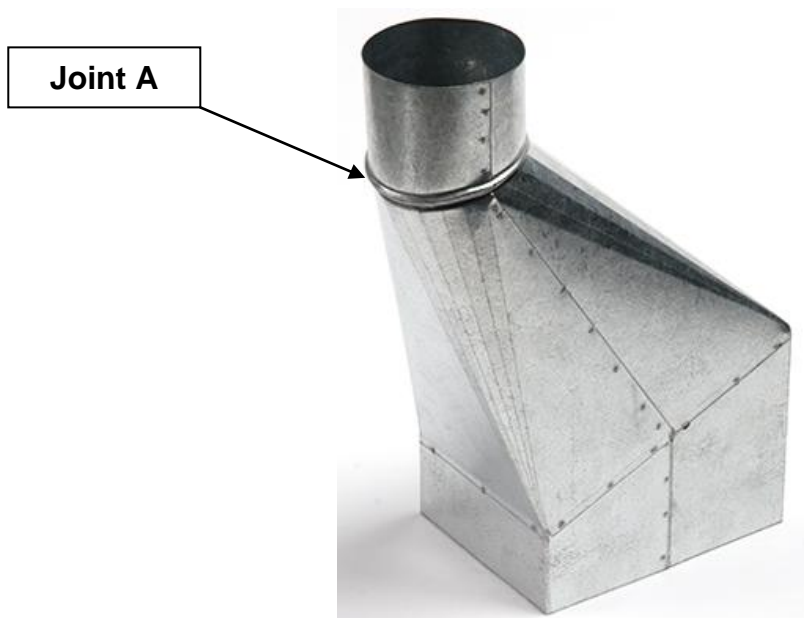


Figure 7: Duct

- (d) Sketch the Single Hem and Double Hem and explain briefly the greatest impact between both of them and their applications. (7 marks)

**Question 4**

- (a) Explain briefly the following cutting processes.
1. Punching
  2. Blanking
  3. Notching
  4. Perforating
- (8 marks)
- (b) Distinguish the Blanking and Punching processes by sketching methods.
- (2 marks)
- (c) Mechanical properties are of great importance in the design, fabrication and maintenance of structure and machines. Various mechanical tests provide immense value to the engineer, metallurgist, technologist, technician and tradesmen. Name **FOUR (4)** types of mechanical properties and describe briefly any **TWO (2)** of the mechanical properties.
- (10 marks)

**END OF QUESTION**