



**UNIVERSITI KUALA LUMPUR
MALAYSIA FRANCE INSTITUTE**

**FINAL EXAMINATION
JANUARY 2014 SESSION**

SUBJECT CODE : FWD 12103
SUBJECT TITLE : WELDING AND CUTTING PROCESS
LEVEL : DIPLOMA
TIME / DURATION : 2.5 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 **TWO (2)** sections. Section A and B. Answer **ALL** questions in Section A. For Section B, answer **FOUR (4)** questions only.
 6. Answer **ALL** questions in English
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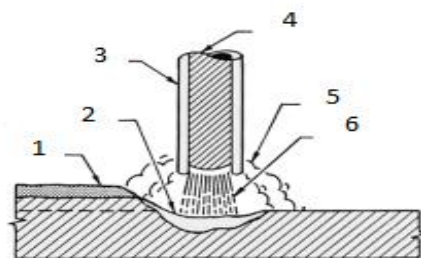
THERE ARE 4 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

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

- (a) The oxyacetylene welding (OAW) process uses a combination of oxygen and acetylene gas to provide a high temperature flame. OAW is a manual process in which the welder must personally control the torch movement and filler rod application.
- (i) State **TWO (2)** functions of a regulator. (4 marks)
- (ii) Why should acetylene cylinders be stored in the upright position? (2 marks)
- (iii) Name the 'solder' for safety plugs in the top and bottom of acetylene cylinders. (1 marks)
- (iv) What is inside the acetylene cylinder? (2 marks)

Question 2

In arc welding, the intense heat needed to melt metal is produced by an electric arc. The arc is formed between the actual work and an electrode (stick or wire) that is manually or mechanically guided along the joint.

**Figure 2 – Arc Process**

- (i) Label all the items in Figure 2. (6 marks)
- (ii) Name the two kinds of invisible rays which can injure eyes and skin (2 marks)
- (iii) Name the electrode movement in welding as in Figure 3 (3 marks)

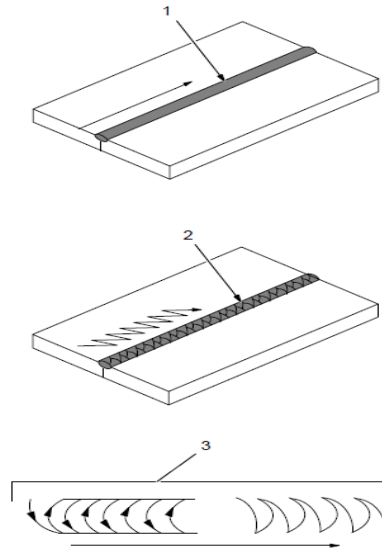


Figure 3 – Electrode Movement

- (iv) Interpret the acronym below for the world welding association, (4 marks)
 - (a) ANSI
 - (b) API
 - (c) ASME
 - (d) AWS

Question 3

The shielding gas serves to blanket the weld and exclude the active properties in the surrounding air.

- (i) List down **TWO (2)** types of shielding gases use in GTAW process. (2 marks)
- (ii) Name the types of tungsten electrode used to weld carbon steel (2 marks)
- (iii) State **FIVE (5)** advantages of Gas Tungsten Arc Welding process (GTAW). (5 marks)
- (5 Label all the 7 items in **Figure 4** for Gas Metallic Arc Welding (GMAW). (7 marks)

Question 4

- (i) Name **FOUR (4)** types of coating for electrodes (4 marks)
- (ii) Describe any **THREE (3)** of the coating properties. (6 marks)
- (iii) Write in the numbered empty boxes for E-60 series electrode with the correct information.

AWS Class	Type of Coating	Capable of producing Satisfactory welds in Positions	Type of Current
E-6010	1	F,V,OH,H	2
E-6011	High cellulose potassium	3	AC or DC, Electrode Positive
E-6012	High titania sodium	4	5
E-6020	High iron oxide	7	AC or DC, Electrode Negative
E-6027	8	9	10

(10 marks)

SECTION B (Total: 40 marks)**INSTRUCTION: Answer FOUR (4) questions only.****Please use the answer booklet provided.****Question 1**

- (i) Compare 'brazing' to oxy-acetylene welding (OAW). (7 marks)
- (ii) State the **TWO (2)** conditions why we have to use acetylene safely. (3 marks)

Question 2

- (i) List the **FOUR (4)** safe work practices in oxy-acetylene welding process. (4 marks)
- (ii) State the name given to a 'movement' in a pressure regulator gauges. (3 marks)
- (iii) State the temperature for a safety plug in the top and bottom of an acetylene cylinder to melt. (3 marks)

Question 3

- (i) Distinguish between a straight polarity and reverse polarity. Provide an illustration to your answer. (10 marks)

Question 4

- (i) There are 3 modes of Gas Metal Arc Transfer in GMAW, distinguish any **TWO (2)** and provide illustration to your answer. (10 Marks)

Question 5

- (i) Distinguish between fire prevention and ventilation. (10 marks)

END OF QUESTION