Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2023/2024

COURSE NAME	:	WELDING PRODUCT TESTING
COURSE CODE	:	BBW 30202
PROGRAMME CODE	:	BBD
EXAMINATION DATE	:	JULY 2024
DURATION	:	2 HOURS
INSTRUCTIONS	:	1. ANSWER ALL QUESTIONS 2. THIS FINAL EXAMINATION IS CONDUCTED VIA ☐ Open book ☒ Closed book 3. STUDENTS ARE **PROHIBITED** TO CONSULT THEIR OWN MATERIAL OR ANY EXTERNAL RESOURCES DURING THE EXAMINATION CONDUCTED VIA CLOSED BOOK

THIS QUESTION PAPER CONSISTS OF **FIVE (5)** PAGES

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Q1 (a) State **TWO (2)** characteristics of Destructive Test.

(4 marks)

(b) The following statements are the reasons for using destructive test (DT). Explain each of the reason.

(i) Welder performance qualification.
(ii) Research inspection.
(iii) Sampling inspection of raw materials.

(9 marks)

(c) Explain the basic procedure of Rockwell Hardness Test.

(6 marks)

(d) State a difference and similarity between Brinell Hardness Tester and Rockwell Hardness Tester.

(6 marks)

Q2 (a) Sketch a diagram and explain clearly how eddy current is generated.

(10 marks)

(b) In penetrant inspection, developer is applied to the test piece to draw penetrant trapped in flaws back to the surface where it will be visible. Explain the following developer's properties:

(i) Absorbent.
(ii) Non-fluorescent.
(iii) Able to mask out background colour.
(iv) Non-irritant.

(12 marks)

(c) If aqueous liquid developer is used in the penetrant inspection, state **THREE (3)** methods can be used to apply developer on the test specimen.

(3 marks)

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Q3 (a) There are many reasons for using non-destructive test (NDT). Explain briefly **THREE (3)** reasons of using NDT.

(6 marks)

(b) In magnetic particle inspection, magnetic particles are the major material used to perform the test. Explain why the magnetic particles are produced in different colours and sizes.

(6 marks)

(c) **Figure Q3(c)** illustrates a type of defect in a welding product.

(i) What type of defect is shown in **Figure Q3(c)**?

(2 marks)

(ii) Suggest a test to detect the defect stated in Q3(c)(i) . Give a reason for your suggestion.

(4 marks)

(iii) State **THREE (3)** other defects that can be detected using the test suggested in Q3(c)(ii).

(3 marks)

(iv) State **TWO (2)** advantages and disadvantages of the inspection method proposed in Q3(c)(ii).

(4 marks)

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Q4 (a) State **TWO (2)** factors that influence the selection of a film in radiography test.

(4 marks)

(b) In radiography inspection, the quality of image is important to ensure the existing defects can be clearly indicated. Explain **TWO (2)** aspects that determine the quality of image.

(8 marks)

(c) Sketch a simple diagram and explain the concept of ultrasonic testing.

(10 marks)

(d) State **TWO (2)** advantages of using P scan to present the defect information in ultrasonic testing.

(3 marks)

END OF QUESTIONS

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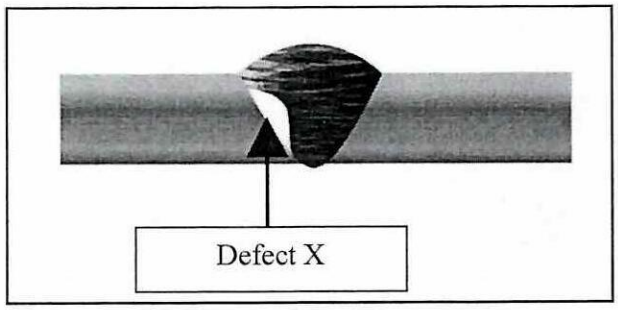

Figure Q3(c): Front view of cross-section

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