



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER I
SESSION 2019/2020**

COURSE NAME : WELDING PRODUCT TESTING
COURSE CODE : BBW 30202
PROGRAM : BBD
DATE : DECEMBER 2019/JANUARY 2020
DURATION : 2 HOURS
INSTRUCTION : ANSWER ALL QUESTIONS

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THIS QUESTION PAPER CONSISTS OF **FOUR (4)** PRINTED PAGES

- Q1** (a) State and explain three (3) reasons for using destructive test in welding. (9 marks)
- (b) State the destructive test that can be used to measure the following mechanical properties of a welding product:
- (i) Hardness
 - (ii) Toughness
 - (iii) Stress or strain
- (3 marks)
- (c) State three (3) benefits and three (3) limitations of destruction test. (6 marks)
- (d) Mr Brown works as a welding inspector in XYZ company. He usually inspects the welding product using Nick-Break Test to see if the products have met the quality.
- (i) Explain the procedures taken by Mr Brown to perform the Nick-Break Test. (5 marks)
 - (ii) State two (2) types of defect can be detected by Mr Brown using Nick-Break Test. (2 marks)

- Q2** (a) State three (3) uses of Non-Destructive Test (NDT), and when list three (3) types of defect that can be detected by NDT. (3 marks)
- (b) NDT can be applied at almost any stage in the production. State when NDT is used (three (3) answers are expected). (3 marks)
- (c) List down three (3) benefits and three (3) limitations of NDT. (6 marks)
- (d) Figure Q2(d) illustrates a type of defect in a welding product.

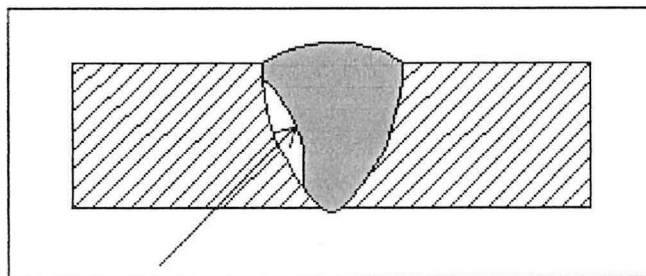


Figure Q2(d): Front view of cross-section

- (i) What type of defect is shown in Figure Q2(d)? (2 marks)
- (ii) Suggest a test to detect the above defect. Give a reason for your suggestion. (4 marks)
- (iii) State three (3) advantages of the suggested test. (3 marks)
- (iv) Is it possible to detect the defect using dye penetrant test? Justify your answer. (4 marks)

- Q3**
- (a) Explain clearly the procedures of performing magnetic particle test on a surface. (9 marks)
 - (b) In penetrant testing (PT), penetrant should be applied on the surface of the test piece in order to make the defect visible.
 - (i) State two (2) methods of applying penetrant on the surface. (2 marks)
 - (ii) List down two (2) factors that affect the penetration process on the surface. (2 marks)
 - (c) An internal defect of a product is inspected using ultrasonic testing method. Figure Q3(c) shows the output on the screen of the test equipment.

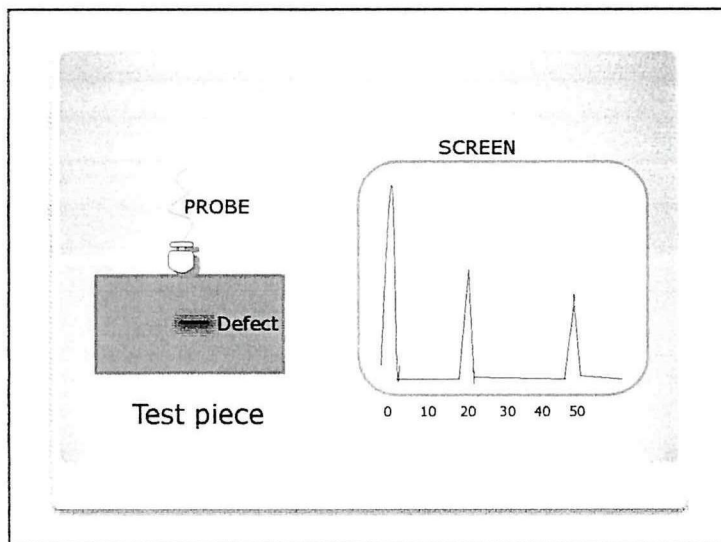


Figure Q3(c)

- (i) What is the thickness of the test piece?
 - (ii) What is the distance of the defect from the top surface?
 - (iii) What precaution should be taken in order to get a better signal to detect the defect?
 - (iv) What other test can be used for detecting the same defect?
(8 marks)
- (d) What is the problem if
- (i) the angle of a probe is less than the first critical angle?
(2 marks)
 - (ii) the angle of a probe is more than second critical angle?
(2 marks)
- Q4**
- (a) State the basic steps in performing an inspection using Eddy Current Test.
(6 marks)
 - (b) State three (3) disadvantages of Eddy Current Test.
(3 marks)
 - (c) Draw an appropriate diagram and explain the basic concept of radiography testing.
(10 marks)
 - (d) Engineered control and administrative control are the two basic type of radiation safety control in radiography testing. State two (2) methods of both engineered and administrative controls.
(4 marks)

- END OF QUESTIONS -

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