

CBIP Examination Paper - UT Thickness Testing

Level 1 Specific

- 1 Thickness testing is usually accomplished using:
- A. Pulse echo method
 - B. Tip diffraction method
 - C. Surface waves
 - D. None of the above
- 2 Excessive noise and a lack of back wall reflection can be improved by:
- A. Improving the coupling
 - B. Increasing the test probe frequency
 - C. Normalising the material
 - D. None of the above
- 3 When testing a metallic material which transducer would give the best resolution?
- A. Large diameter high frequency transducer
 - B. Large diameter low frequency transducer
 - C. Small diameter high frequency transducer
 - D. Small diameter low frequency transducer
- 4 Using the 6dB drop method to size a lamination, the defect boundary is located:
- A. Under the inner edge of the probe
 - B. Under the centre of the probe
 - C. Under the outer edge of the probe
 - D. When the signal has disappeared
- 5 A lamination is an imperfection which might be found in:
- A. Castings
 - B. Forgings
 - C. Billets
 - D. None of the above
- 6 Which of the following are not service induced defects?
- A. Corrosion pitting
 - B. Stress corrosion cracks
 - C. Laminations
 - D. Fatigue cracks

- 7 When changing to testing a material of different velocity, correct measurements can be obtained by:
- A. Using a measurable section of the test material to recalibrate
 - B. Converting the readings using a formula
 - C. Recalibrating using a block of the same material as the test material
 - D. All of the above
- 8 Necessary properties of ultrasonic couplants are:
- A. Good acoustic transmission
 - B. Non-corrosive on the test material
 - C. Viscosity to fill the probe to test surface gap
 - D. All of the above
- 9 When a plate contains coarse inclusions, what effect do they have on the A-scan signal?
- A. Small defect indications only
 - B. Some loss of back echo only
 - C. Small defect indications and some loss of back echo
 - D. A horizontal shift in the back echo
- 10 As a level 1 technician, you have performed a lamination test to a written instruction and found a lamination. You should:
- A. Size the lamination
 - B. Record the details
 - C. Refer to a level 2 for assessment
 - D. All of the above
- 11 State five factors which influence the signals from coarse inclusions and laminations (2 each)
- 12 State why a couplant is used during ultrasonic testing.
- 13 Your work instruction requires you to calibrate (A-scan display) for a range of 20mm. Your test block has steps of 2.5mm, 5mm, 7.5mm and 10mm. You are expecting thickness measurements in the range 3 to 4mm. Indicate which step or steps you would use for calibrating your instrument (2 marks) and show (using diagrams) where these would appear on your screen display (3 marks).
- 14 List three surface conditions which can influence the technique used in thickness testing. What effect do these three factors have?
- 15 In order to improve accuracy your work instruction tells you to measure the thickness using the fourth echo on an unpainted surface. Show how this is done, using screen trace sketches.