

CBIP Examination Paper - Magnetic Particle Inspection

Level 2 Specific

- 1 You have been asked to perform a MT inspection on a 320 mm long solid shaft with dia of 40 mm using a cable wrap procedure. Which of the following would be correct?
- A. 3 turns with 1167 amps would establish an acceptable longitudinal field
 - B. 4 turns with 875 amps would establish an acceptable longitudinal field
 - C. 5 turns with 700 amps would establish an acceptable longitudinal field
 - D. All of the above would be correct
- 2 Cracks in the weld bead caused by stresses from solidification or uneven cooling, generally at the start or stop of a weld are known as:
- A. Crater cracks
 - B. HAZ cracking
 - C. Porosity cracks
 - D. Hydrogen embrittlement cracking
- 3 Flat and spiral coils are normally used:
- A. To support the item while the inspection is carried out
 - B. To produce a circular magnetic field in flat discs
 - C. To magnetise long shafts
 - D. To produce a radial magnetic field in flat discs
- 4 Water break tests are:
- A. Used to assess the adequacy of the precleaning process
 - B. Designed to assess the fluids wetting ability
 - C. Used to test water based particle carrier fluids
 - D. All of the above
- 5 Tesla, the new SI unit representing Flux Density, replaces which of the following well known units?
- A. Gauss
 - B. Ampere
 - C. Ohm
 - D. None of the above
- 6 Which of the following checks would use a known defect standard?
- A. System performance
 - B. Ammeter calibration
 - C. Field indicator accuracy
 - D. Coil demagnetisation

- 7 What is the recommended minimum UV light intensity for a standard MT inspection using fluorescent particles? (measured at 380mm from the light)
- A. 1000 mW/cm² (microwatts per square cm)
 - B. 10 W/m² (watts per square meter)
 - C. Both A and B
 - D. None of the above
- 8 AS 1171 allows the use of black lights provided:
- A. The filter glass is not cracked or broken
 - B. It complies with AS 6670
 - C. It is used with a safety transformer
 - D. All of the above
- 9 Magnetic shims, or IQI's used in the MT method are designed to show:
- A. Magnetic field direction
 - B. Current direction
 - C. Demagnetisation
 - D. None of the above
- 10 Splined shafts inspected for cracking running along the splines should be magnetised by:
- A. An AC yoke
 - B. Current flow using a head shot
 - C. An AC coil
 - D. A DC coil
- 11 Describe what is meant by the term "Annealing" with respect to steel
- 12 The written instruction you are preparing is for the inspection of a butt welded plate using a yoke and colour contrast wet particles. List all the information, associated with the item to be tested, that should be included in this instruction
- 13 Describe how a typical MT indication produced by a machine mark would differ from that produced by a fatigue crack
- 14 Describe how a typical system performance test is carried out using the KETOS tool steel ring. Include the results you would expect to get using 3,400 amps FWDC
- 15 A MT inspection of a double "T" fillet weld using Half wave DC produces an indication running the full length of the weld. The indication is not present when reinspecting with AC. Discuss the probable cause of this indication.