

# CBIP Examination Paper - Magnetic Particle Inspection

## Level 2 General

- 1 The magnitude of the residual magnetic field in a part will be dependent on:
- A. The L/D ratio (length to diameter) of the part
  - B. The Magnetising Force and Permeability of the part
  - C. The Saturation point
  - D. All of the above
- 2 A Longitudinal magnetic field:
- A. Will have at least 2 magnetic Poles
  - B. Will only have 1 magnetic Pole
  - C. Has no magnetic Poles
  - D. None of the above
- 3 Prods are not recommended for use on critical parts such as aircraft engine shafts because:
- A. Of the possibility of burning and arcing
  - B. Prods cannot produce the required field strength
  - C. Prods should only be used for inspection of castings
  - D. None of the above
- 4 What should be taken into consideration when determining the correct amperage value when using a coil?
- A. Length of the part only
  - B. Length to diameter ratio of the part and number of turns in the coil
  - C. Length to diameter ratio of the part, number of turns in the coil and fill factor
  - D. Length to diameter ratio of the part, number of turns in the coil, fill factor and total length of the part
- 5 Current values when using the heads on a MT bench unit are:
- A. Determined by the type of material
  - B. Are set by the type of machine and available current
  - C. Determined by diameter of the part only
  - D. Determined by diameter and length of the part
- 6 What advantage is gained from using half wave (pulsed) DC instead of full wave DC?
- A. Better particle mobility
  - B. Better particle mobility and sub surface detection
  - C. Better particle mobility and surface detection
  - D. Reduces the peak magnetising current
- 7 When using the wet particles in water suspension, wetting agents are added to:
- A. Prevent freezing
  - B. Prevent corrosion of inspection equipment
  - C. Ensure proper wetting of the part
  - D. Decrease the amount of water needed

- 8 Which procedure would be recommended for testing highly permeable material?
- A. Continuous
  - B. Residual
  - C. DC wet
  - D. DC dry
- 9 The best way to magnetise a crankshaft to detect circumferential cracks in the bearing radius is to:
- A. Pass a current through it using the head shot.
  - B. Magnetise it using a coil
  - C. Use a Central Conductor or Threader Bar
  - D. Use a magnetic hand Yoke
- 10 Which one of the following is not a discontinuity common to rolled products?
- A. Seams
  - B. Laminations
  - C. Cold shuts
  - D. Cracks
- 11 Which of the following discontinuity would have the strongest magnetic particle indication?
- A. A surface crack running parallel to the magnetising current
  - B. A surface crack running parallel to the magnetic field
  - C. A surface crack 45 degrees to the magnetic field
  - D. A surface crack running transverse to the magnetising current
- 12 Which of the following is an advantage of the dry method over the wet method?
- A. It is more sensitive to fine surface cracks
  - B. It is more capable of providing full surface coverage on irregularly shaped parts
  - C. It is suitable for testing hot components
  - D. It is faster than the wet method when testing a number small parts
- 13 A metal that is difficult to magnetise is said to have:
- A. High permeability
  - B. Low permeability
  - C. Low coercive force
  - D. Low Retentivity
- 14 Magnetic lines of force that are close together in a part will:
- A. Have a higher flux density than an area where the lines are further apart
  - B. Indicate that the field is non uniform
  - C. Indicate that the part is non magnetic
  - D. Have a lower flux density than an area where the lines are further apart

- 15** The two axes on a Hysteresis curve are:
- A. Magnetising force and Permeability
  - B. Magnetising force and Flux density
  - C. Permeability and Residual magnetism
  - D. Flux and Saturation
- 16** If a current of the same amperage is passed through two conductors of the same dimensions, one of which is magnetic and one of which is nonmagnetic, the magnetic field surrounding the conductors will:
- A. Be weaker for the magnetic conductor
  - B. Be weaker for the nonmagnetic conductor
  - C. Vary with the permeability
  - D. Be the same for both conductors
- 17** In Magnetic Particle testing, Leakage Fields:
- A. Have a large effect on the sensitivity of the inspection
  - B. Are required in order to produce an indication
  - C. Can be produced by changes of permeability on the surface of the part
  - D. All of the above are correct
- 18** Internal splines and holes drilled parallel to, or near test surfaces can cause:
- A. Broad, fuzzy indications directly aligned with the part's internal contours
  - B. Sharp, well-defined indications running at 90 degrees to the part's internal contours
  - C. No indications
  - D. Both A and B above
- 19** After inspecting a bolt using the AC wet continuous method using the correct current formula, it is found that there is a large build-up of particles in all the threads. What could be done to assist interpretation?
- A. Demagnetise and retest at the same amperage
  - B. Demagnetise and retest at a higher amperage
  - C. Carry out the test using the residual technique
  - D. Change to DC current
- 20** Which of the following would be a candidate for using Magnetic Rubber?
- A. Internal threads
  - B. External threads
  - C. Nozzle welds
  - D. Longitudinal welds in plate