

CS/B.Tech/AUE/Odd/Sem-7th/AUE-705A/2015-16



MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY,
WEST BENGAL

AUE-705A

NON-DESTRUCTIVE TESTING METHODS

Time Allotted: 3 Hours

Full Marks: 70

*The questions are of equal value.**The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words as far as practicable.**All symbols are of usual significance.*

GROUP A
(Multiple Choice Type Questions)

10×1 = 10

1. Answer all questions.

- (i) Acoustic emission testing is a
(A) active testing (B) passive testing
(C) may be active or passive (D) none of these
- (ii) In Eddy current testing depth of penetration is limited to
(A) 2 mm (B) 6 mm
(C) 4 mm (D) 8 mm
- (iii) Eddy current testing methods may be used for
(A) sorting materials (B) measuring thin coating
(C) measuring thick coating (D) all of these

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Turn Over

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- (iv) Magnetic particle testing is applicable to
(A) ferromagnetic materials (B) copper material
(C) aluminum material (D) all of these
- (v) The limitation of liquid penetrate test is
(A) only surface breaking discontinuities can be detected
(B) porous materials cannot be tested
(C) there is cleaning problem following penetrant inspection in some cases
(D) all of these
- (vi) Coating thickness can be detected with the help of
(A) eddy current testing (B) liquid penetrant testing
(C) visual testing (D) radiographic testing
- (vii) Which method is the best recommended in inter granular corrosion?
(A) liquid penetrant testing (B) eddy current testing
(C) ultrasonic Testing (D) magnetic particle testing
- (viii) Black light source is used for
(A) X-ray method (B) Fluorescent penetrant method
(C) Thermography (D) None of these
- (ix) The maximum frequency usually used for contact ultrasonic testing is
(A) 1 MHz (B) 5 MHz
(C) 10 MHz (D) 25 MHz
- (x) Couplant _____ the transmission of ultrasonic energy from the transducer into the test specimen
(A) decrease (B) increase
(C) restrict (D) none of these

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GROUP B
(Short Answer Type Questions)

Answer any *three* questions.

3×5 = 15

- ✓ 2. Compare destructive testing with non-destructive testing.
3. What are the advantages and disadvantages of visual testing?
- ✓ 4. ✓ What are the advantages and disadvantages of Acoustic Emission Testing (A.E.T.) ✓
- ✓ 5. ✓ Explain different types of ultrasonic waves. Explain different types of transducers used in ultrasonic inspection.
- ✓ 6. ✓ Explain, in brief, the various techniques that can be employed for the demagnetization of component after doing magnetic particle testing.

GROUP C
(Long Answer Type Questions)

Answer any *three* questions.

3×15 = 45

7. (a) Write down the principle of Eddy current testing method with neat sketch. 8+7
(b) Explain with neat sketch the principle of Radiographic testing method.
- ✓ 8. ✓ (a) Explain with a neat sketch how the following components are inspected? 8+7
(i) casting (ii) welding (iii) hollow cylinder (iv) forging
(b) Write down the principle of Liquid penetrant testing method with neat sketch.
9. (a) Explain with proper sketch the principle of acoustic emission (A. E.T) 4
(b) Discuss briefly about the sources of A.E.T. 5
(c) With neat sketch describe the different data presentation formats of Ultrasonic Testing (U.T). 6

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10. (a) Explain with neat sketch the principles of Ultrasonic Testing (U.T.) 4
(b) Explain with proper sketch the different types of test techniques used in U.T. 6
(c) What are the advantages and disadvantages of U.T.? 5

11. Write short notes of the following:

3×5

- ✓ (a) Visual Testing
- ✓ (b) Advantage and disadvantage of Liquid penetration testing
- ✓ (c) Magnetic particle testing