Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 53296

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Eighth Semester

Mechanical Engineering

ME 6019 – NON DESTRUCTIVE TESTING AND MATERIALS

(Regulation 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. When the non destructive testing methods are used? Why?
2. Distinguish between destructive testing and non destructive testing.
3. What are the advantages and limitations of liquid penetrant test?
4. For which types of materials is penetrant testing not recommended? Why?
5. What are the applications of thermography test?
6. How eddy current is generated?
7. Name the types of ultrasonic transducers used in ultrasonic testing.
8. What is the principle of testing in acoustic emission test?
9. What are the functions of filters and screens in X-ray radiography?
10. Compare and contrast radiography testing with ultrasonic testing.

PART B — (5 × 13 = 65 marks)

11. (a) Explain the following (i) Applications of Visual inspection (ii) Advantages and disadvantages of Visual inspection.

Or

(b) List the advantages, disadvantages and applications of non destructive testing. Also, discuss the major factors that must be considered for an effective non destructive testing.

12. (a) Explain the working of liquid penetrant testing with sketch and state its relative merits, demerits and applications.

Or

(b) With neat sketch explain magnetic particle inspection method and its merits, demerits and applications.

13. (a) What is eddy current testing? Explain the principle with a sketch and discuss the different types of coil arrangements used in eddy current test.

Or

(b) Explain the principle of thermography process and its advantages and disadvantages.

14. (a) What is ultrasonic testing? Draw the schematic diagram and explain the three methods of scanning (A-scan, B-scan, C-scan) used in ultrasonic testing.

Or

(b) With neat sketch explain the working principle of acoustic emission process.

15. (a) Explain the principle of radiography testing method. What are the advantages of gamma ray radiography compared to X-ray radiography? What are penetrameters in radiography testing? List different types of penetrameters.

Or

(b) Describe the following: (i) Fluoroscopy, (ii) Xero-radiography.

PART C — (1 × 15 = 15 marks)

16. (a) Describe the principle and use of computer tomography in NDE.

Or

(b) Explain the use of phased array UT in the inspection of gear.

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