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

Question Paper Code : 50090

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2023.

Sixth Semester

Aeronautical Engineering

AE 8605 — EXPERIMENTAL STRESS ANALYSIS

(Common to Aerospace Engineering)

(Regulations 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define : Accuracy and strain sensitivity.
2. List the difference between contact and non-contact extensometer.
3. What are the materials used for strain gauges?
4. What is meant by Rosette analysis?
5. What is photo elastic effect?
6. State the advantages of three dimensional photo elasticity.
7. What is Moire effect?
8. What is rotational mismatch fringe?
9. What is magnetic particle inspection?
10. State the limitations of non-destructive testing techniques.

PART B — (5 × 13 = 65 marks)

11. (a) What are the different types of extensometer? Explain the working principle of Optical extensometer.

Or

(b) With a neat sketch, explain the working of Acoustical extensometer.

12. (a) What are the various factors to be considered while selecting a strain gauge and write a short note on the calibration of strain gauges?

Or

(b) Explain the different types of electrical resistance strain gauges. Describe the working principle of a capacitance strain gauge.

13. (a) Explain the working principle of circular Polariscope with a suitable diagram and also mention its limitations.

Or

(b) Describe the principle of fringe sharpening and fringe multiplication.

14. (a) State and explain about the failure theories in brittle coating.

Or

(b) Discuss on Moire methods of stress analysis.

15. (a) Explain the working principle of visual inspection and radiography testing.

Or

(b) What is fluorescent penetrate technique? Explain in detail.

PART C — (1 × 15 = 15 marks)

16. (a) With a suitable diagram, describe the working principle of static and dynamic strain measurement of potentiometer.

Or

(b) Explain the concept of compensation and separation techniques in photo elasticity.

———————