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

Question Paper Code : 90080

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2022.

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 sensitivity for measuring instruments.
2. What is the use of Digital Extensometer?
3. What is known as strain and how to measure it using electrical strain gauges?
4. How and why to do calibration and periodical recalibration of strain gauges?
5. Mention few points about Relevance of Photo-elastic materials with experimental stress analysis.
6. How to use a Polariscope?
7. Briefly write about Brittle Coating in Stress analysis.
8. Compare Brittle coating with strain gauge stress analysis.
9. How Thermography is different from other methods of stress analysis?
10. What is Acoustic Emission Technique?

PART B — (5 × 13 = 65 marks)

11. (a) Explain Tool room applications of Accurate and Sensitive Measuring Sensors.

Or

(b) Elaborately write about advantages and limitations of Electrical Extensometers.

12. (a) Where to use Wheat stone bridge and Potentiometer circuits?

Or

(b) What is known as Load Cells and how to use it?

13. (a) Explain the concepts of Light and Photo elastic effects.

Or

(b) How to apply Three Dimensional Photo Elasticity for stress analysis?

14. (a) How to prepare the specimen for Stress Coating and how to infer the results after applying the loads?

Or

(b) Why to study about Failure Theories?

15. (a) Why NOT methods are prefered over destructive methods for aerospace applications? Explain any two methods in detail.

Or

(b) Write with suitable case studies: what for fluorescent Penetrant testing and eddy current testing are used?

PART C — (1 × 15 = 15 marks)

16. (a) Write in detail about Computer software simulation of stress analysis with reference to one particular application.

Or

(b) Explain how experimental stress analysis can help while designing and executing a model of an air craft?

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