Register Number: …….

**B.E DEGREE EXAMINATIONS: NOV / DEC 2010**

Sixth Semester

**AERONAUTICAL ENGINEERING**

U07AR603: Experimental Stress Analysis

**Time: Three Hours** **Maximum Marks: 100**

**Answer All Questions:-**

**PART A (10 x 1 = 10 Marks)**

1. Sensitivity is the _____ can be read

A) Smallest value B) Largest Value C) Mean Value D) All the above

2. Accuracy can be defined as

A) Sensitivity B) Repeatability C) Readability D) Linearity

3. Which one is less Gauge length instrument?

A) Porter lipp Strain gauge B) Berry Strain gauge

C) Howard Strain gauge D) Whittemore Strain gauge

4. One is related to optics

A) Acoustical Strain gauge B) Scratch Strain gauge

C) Tinius Olsen Strain gauge D) Vose Interferometer

5. LVDT is

A) Linear varying differential transformer B) Linear variable different transformer

C) Linear variant differential transformer D) Linear variable differential transformer

6. Gauge Factor is

A) Change in unit resistance per unit strain

B) Change in resistance per unit strain

C) Change in resistance per unit resistance per unit strain

D) All the above

7. Wave length is measured in

A) Frequency B) Angstroms C) mm / Sec D) None of the above

8. Circular Polariscope consist of

A) Two quarter wave plates B) One quarter wave plate

C) Two analyzer D) Two polarizer

9. Eddy current testing is used to detect

A) Surface roughness B) Voids C) Corrosion D) All the above

10. Which one is most suitable method to detect cracks?

A) ultrasonic B) Dye penetrant technique

C) Magnetic particle inspection D) Fluorescent penetrant technique

**PART B (10 x 2 = 20 Marks)**

11. What is meant by Gauge factor?
12. State the difference between Accuracy and Precision.
13. Define strain sensitivity of a gauge.
14. List the various limitations of a mechanical strain gauge.
15. Name the materials used for material gauges.
16. Define a strain rosette.
17. Define Stress optic law.
18. List the photo elastic materials.
19. What is the principle of acoustic emission technique method?
20. State the importance of NDT methods in Aviation Industry.

**PART C (5 x 14 = 70 Marks)**

21. a) Explain in detail the Principles of Measurements. **(OR)**

    b) Write short notes on:
    (a) Accuracy (5)
    (b) Sensitivity (5)
    (c) Range (4)

22. a) List out the various types of Mechanical strain gauges and explain Huggenberger tensometer in detail. **(OR)**

    b) What are the basic characteristics of a strain gauge? Which factors should be considered while selecting a strain gauge?

23. a) Write short notes on the following:
    (i) Electromagnetic strain gauge (7)
    (ii) Weldable strain gauge (7)

    **(OR)**

    b) What are the essential requirements of a balancing technique and discuss the different ways in which you can balance a bridge.

24. a) Sketch a plain polariscope. Explain the effects of a stressed model and the fringes obtained in it. **(OR)**

    b) Explain the Tardy's compensation method in detail. Why this method is preferred over other methods?

25. a) State the uses and advantages of Non-Destructive Testing procedures. Explain in detail any one of the NDT procedure for evaluating a given specimen. **(OR)**

    b) What are the principle of radiography explain the production of X- rays with the help of schematic diagram.

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