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

Question Paper Code: 1106354

B.E. / B.Tech. DEGREE EXAMINATIONS, NOV / DEC 2024
Sixth Semester
Aerospace Engineering
U20AS613 – EXPERIMENTAL STRESS ANALYSIS
(Regulation 2020)

Time: Three Hours | Maximum: 100 Marks

Answer ALL questions

PART – A (10 x 2 = 20 Marks)

1. Define accuracy.

2. Differentiate between range and sensitivity.

3. Define cross sensitivity.

4. Define gauge factor for an electrical resistance strain gauge.

5. Define stress optic law.

6. Summarize a brief note on three-dimensional photoelasticity.

7. Classify the various types of brittle coating techniques.

8. Differentiate between master grating and specimen grating.

9. Examine the significant disadvantages of radiography.

10. List the scope and applications of ultrasonic testing in engineering field.

PART – B (5 x 16 = 80 Marks)

11. (a) Explain in detail about the basic characteristics of measuring devices and also the factors involved in selecting a strain gauge. (16)

(OR)

(b) Explain the working principle of Huggenberger extensometer with neat sketch. Magnification factor should be mentioned clearly. (16)

12. (a) Formulate an expression of the principal stresses and their orientations for T-Delta rosette configuration. (16)

(OR)

(b) Formulate an expression for the change in output voltage measured from a Wheatstone bridge circuit. (16)

13. (a) Formulate the expression for the fringe order in the stressed model kept in the dark field effect combination of a circular polariscope. (16)

(OR)

(b) Formulate the expression for the fringe order in the stressed model kept in the bright field effect combination of a plane polariscope. (16)

14. (a) List out the assumptions made while analyzing brittle coatings. Formulate the expressions for coating stresses. (16)

(OR)

(b) Explain the methodology of strain analysis through MOIRE fringes. (16)

15. (a) Explain the following NDT methods with neat sketches. (16)
(i) Acoustic Emission Technique
(ii) Ultrasonic Testing

(OR)

(b) Explain the following NDT methods with neat sketches. (16)
(i) Thermography
(ii) Eddy current Testing

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