Register Number:……..

KUMARAGURU
college of technology
character is life

B.E DEGREE EXAMINATIONS: NOV/DEC 2022

(Regulation 2018)

Seventh Semester

AERONAUTICAL ENGINEERING

U18AEE0010**:** Experimental Stress Analysis

COURSE OUTCOMES

CO1:	Identify the parameters that control the behavior and response of a measurement system.
CO2:	Measure the change in length of the solid materials using suitable extensometers.
CO3:	Analyze the strain gauge data under various loading condition by using gauge rosette method.
CO4:	Apply experimental techniques of stress analysis using photo elasticity and strain gauges.
CO5:	Identify the location and size of defect in structural materials using NDT

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

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1.	Define: (i) Static Correction (ii) Static Error	CO1	[K_1]
2.	Define gauge factor.	CO1	[K_1]
3.	What are the basic requirements of an extensometer?	CO2	[K_2]
4.	Classify the extensometers depending upon the magnification systems.	CO2	[K_1]
5.	List the basic characteristics of strain gauge.	CO3	[K_2]
6.	Give the advantages of strain Rosette analysis.	CO3	[K_2]
7.	What is a grating in moiré techniques?	CO4	[K_2]
8.	List the properties of photo elastic materials.	CO4	[K_2]
9.	List the various parts involved in the gamma ray producing instrument.	CO5	[K_2]
10.	What are the types of NDT method used to detect surface and internal surface flaws?	CO5	[K_2]

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11.		Explain in detail the Principles of Measurements.		CO1	[K_2]
12.	a)	Explain about important components of Huggenberger extensometer	8	CO2	[K_2]

	b)	With neat Sketch explain the working of Marten's optical gauge.	8	CO2	[K_2]
13.		List the types of resistance strain gauges and explain in detail about bonded strain gauges.		CO3	[K_2]
14.	a)	With neat sketch, explain the circular polariscope setup.	6	CO4	[K_2]
	b)	Explain the effect of a stressed model in a plane polariscope.	10	CO4	[K_2]
15.	a)	With neat sketch explain the process involved in production of X-ray radiography.	12	CO5	[K_2]
	b)	State the uses and advantages of Non-Destructive Testing procedures.	4	CO5	[K_2]
16.	a)	Explain about working principle of Wheatstone bridge with neat circuit diagram.	8	CO3	[K_2]
	b)	Determine maximum shear stress at a point by using the following strain gauge readings of rectangular strain rosette $\varepsilon_{0^\circ} = 400 \times 10^{-6}$; $\varepsilon_{45^\circ} = 375 \times 10^{-6}$; $\varepsilon_{90^\circ} = 200 \times 10^{-6}$ Young's Modulus = E= 200 GPa Poisson's ratio = 0.25	8	CO3	[K_3]

****