Roll No.												

PRESIDENCY UNIVERSITY
BENGALURU

School of Engineering

Mid - Term Examinations - November 2024

Semester: VII
Course Code: MEC3050
Course Name: Experimental stress analysis
Program: B.TEC

Date: 7-11-2024
Time: 09:30am – 11:00am
Max Marks: 50
Weightage: 25%

Instructions:

(i) Read all questions carefully and answer accordingly.
(ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks. 2Mx5Q=10M

1	Define strain gauge.	**2 Marks**	**L1**	**CO1**
2	Write the Assumptions of strain rosettes	**2 Marks**	**L1**	**CO1**
3	List the different types of Adhesives.	**2 Marks**	**L1**	**CO1**
4	List the matrial used in the Strain gauge.	**2 Marks**	**L1**	**CO2**
5	What is strain sensitivity?	**2 Marks**	**L1**	**CO2**

Part B

Answer ALL Questions. Each question carries 10 marks. 4QX10M=40M

6	**6a**	Explain with neat sketch:1.Bonded Wire Strain gauge	**5 Marks**	**L2**	**CO1**
	6b	Write any five Applications of strain gauges	**5 Marks**	**L2**	**CO1**
7		Derive the Wheatstone network balanced resistance condition	**10 Marks**	**L2**	**CO1**
8	**8a**	Explain desirable characteristics of Adhesives	**5 Marks**	**L2**	**CO1**
	8b	Write a note on “Epoxy Cement” Adhesives	**5 Marks**	**L2**	**CO1**

or

9	**9a**	Write strain rosette configurations.	**5 Marks**	**L2**	**CO2**
	9b	Write a note on strain gauge materials.	**5 Marks**	**L2**	**CO2**
10		Define Gauge Factor. Derive an expression for it.	**10 Marks**	**L3**	**CO1**

or

11	Explain with neat sketch Strain Gauge Mounting Techniques.	**10 Marks**	**L3**	**CO1**
12	Write of Gauge constructions Characteristics	**10 Marks**	**L3**	**CO1**

or

13	A delta rosette yields the following strain indications εa =-845μm/m,εb =1220μm/m and εc=710μm/m. Calculate the maximum principal strain direction, the principal stresses. Take E = 200 GPa, poison's ratio (μ= 0.285)	**10 Marks**	**L3**	**CO2**