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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

January / February 2025 Semester End Main Examinations

Programme: B.E.

Semester: V

Branch: Aerospace Engineering

Duration: 3 hrs.

Course Code: 23AS5PEETA/22AS5PEETA

Max Marks: 100

Course: Experimental Techniques for Aerospace Engineering

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT - I			CO	PO	Marks
1	a)	Explain the development of material standards.	<i>CO1</i>	<i>PO1</i>	10
	b)	What is the need of inspection?	<i>CO1</i>	<i>PO1</i>	05
	c)	Write down the objectives of metrology.	<i>CO1</i>	<i>PO1</i>	05
OR					
2	a)	Illustrate the factors affecting precession and accuracy of metrology.	<i>CO1</i>	<i>PO1</i>	12
	b)	Explain the general characteristics of metrology.	<i>CO1</i>	<i>PO1</i>	08
UNIT - II					
3	a)	Derive the expression for strain sensitivity in the metallic alloy.	<i>CO1</i>	<i>PO1</i>	05
	b)	State the characteristics of strain gauge.	<i>CO1</i>	<i>PO1</i>	07
	c)	Explain the parameters influencing the behaviour of strain gauge.	<i>CO1</i>	<i>PO1</i>	08
OR					
4	a)	What are the types of strain gauge? Explain any two with a neat sketch.	<i>CO1</i>	<i>PO1</i>	10
	b)	With a neat sketch explain the steps for mounting strain gauge.	<i>CO1</i>	<i>PO1</i>	10
UNIT - III					
5	a)	Explain any four repair methods of composite structure.	<i>CO2</i>	<i>PO1</i>	10
	b)	What are the mechanical properties of composite? What are different modes of failure in impact testing?	<i>CO2</i>	<i>PO1</i>	10
OR					
6	a)	Describe the high velocity ballistic impact test method with its failure modes.	<i>CO2</i>	<i>PO1</i>	10

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

	b)	Explain any five fault detection methods in the composite structures	CO2	PO1	10
		UNIT - IV			
7	a)	Explain some methods for aircraft lightning protection of composite aircrafts.	CO3	PO1	10
	b)	What is the significance of bonding and grounding in aircraft lightning protection?	CO3	PO1	10
OR					
8	a)	Explain the working principle of the schlieren system with a neat diagram and mention its application.	CO3	PO1	10
	b)	Write the block diagram and working of laser doppler velocimeter.	CO3	PO1	10
UNIT - V					
9	a)	Describe the main purposes of ground vibration testing.	CO3	PO1	10
	b)	What is ground vibration testing? Draw and explain its final configuration.	CO3	PO1	10
OR					
10	a)	Discuss the basic principles of crashworthy design.	CO3	PO1	10
	b)	What is post-crash survival and what are the various methods to tackle it?	CO3	PO1	10
