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

Autonomous Institute Affiliated to VTU

February / March 2023 Semester End Main Examinations

Programme: B.E.

Branch: Aerospace Engineering

Course Code: 20AE5DEETA

Course: Experimental Techniques for Aerospace Engineering

Semester: V

Duration: 3 hrs.

Max Marks: 100

Date: 03.03.2023

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

- | | | |
|---|---|----|
| 1 | a) What is the need of inspection? | 5 |
| | b) With neat diagrams, explain the elements of generalised measuring systems. | 5 |
| | c) Explain the factors affecting precession and accuracy of metrology. | 10 |

UNIT - II

- | | | |
|---|--|----|
| 2 | a) With neat sketches explain the steps for mounting the strain gauge. | 10 |
| | b) Derive an expression for strain sensitivity in the metallic alloy. | 5 |
| | c) What is strain gauge? State applications of strain gauge. | 5 |

OR

- | | | |
|---|---|----|
| 3 | a) Explain the parameters influencing the behaviour of strain gauge. | 10 |
| | b) What are the characteristics of strain gauge? Write a brief note on electrical resistance of strain gauge. | 10 |

UNIT - III

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|---|--|----|
| 4 | a) Explain any five repair methods of the composite structure. | 10 |
| | b) What are the mechanical properties of composite? What are different modes of failure in impact testing? | 10 |

UNIT - IV

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|---|--|----|
| 5 | a) What is the Doppler effect? Write the block diagram and working of Laser Doppler Velocimetry. | 10 |
| | b) Explain the pitot measurement for compressible and incompressible flow. | 10 |

UNIT - V

- | | | |
|---|--|----|
| 6 | a) Explain the types of impact failure and mention the causes of failures. | 10 |
| | b) Draw and explain the working principle of a shaker system. | 7 |
| | c) Write the assumptions of modal analysis in Ground Vibration Testing. | 3 |

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.

OR

- 7 a) What is Ground Vibration Testing? Draw and Explain its final configuration. **10**
- b) What is post-crash survival and what are the various methods to tackle it? **10**

B.M.S.C.E. - ODD SEM 2022-23