

# 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

- 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

- 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**

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