

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

Autonomous Institute Affiliated to VTU

## September / October 2023 Supplementary Examinations

**Programme: B.E.**

**Branch: Aerospace Engineering**

**Course Code: 19AE3DCMAE**

**Course: Materials for Aerospace Engineering**

**Semester: III**

**Duration: 3 hrs.**

**Max Marks: 100**

**Date: 14.09.2023**

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

### UNIT - I

- |   |    |   |    |
|---|----|---|----|
| 1 | a) | Explain the role of matrix, reinforcement and interface in composite material.      | 8  |
|   | b) | List the different techniques for processing PMC. Explain any two with neat sketch. | 12 |

### OR

- |   |     |   |    |
|---|-----|---|----|
| 2 | a)  | Determine the young's modulus of FRC for                        | 12 |
|   | i)  | iso stress condition  |    |
|   | ii) | iso strain condition  |    |
|   | b)  | Write a note on fiber reinforced composite and its application. | 8  |

### UNIT - II

- |   |    |   |    |
|---|----|---|----|
| 3 | a) | Write a note on magnesium alloys.   | 8  |
|   | b) | Explain about the casting of aluminum alloy by taking a suitable example. | 12 |

### OR

- |   |    |  |   |
|---|----|--|---|
| 4 | a) | List the advantages and disadvantages of titanium and its alloys.    | 8 |
|   | b) | Write a note on cast and wrought alloys.                             | 4 |
|   | c) | Explain about the heat treatment process of aluminum and its alloys. | 8 |

### UNIT - III

- |   |    |  |   |
|---|----|--|---|
| 5 | a) | Explain the heat treatment process of ferrous materials.                               | 6 |
|   | b) | Explain about the steel used in aerospace industry.                                    | 6 |
|   | c) | Explain the various corrosion phenomenon occurring in an aircraft and its preventions. | 8 |

**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.

#### **UNIT - IV**

- |   |    |  |    |
|---|----|--|----|
| 6 | a) | Explain any two fabrication process involved in metal matrix composite with a neat sketch. | 12 |
|   | b) | Write a note on radar absorbing materials and methods to achieve stealth.                  | 8  |

#### **UNIT - V**

- |   |    |   |    |
|---|----|---|----|
| 7 | a) | Explain about linear and non-linear elastic properties in a material. | 12 |
|   | b) | Explain about slip and twinning with a neat sketch.                   | 8  |

\*\*\*\*\*

SUPPLEMENTARY EXAMS 2023