

U.S.N.									
--------	--	--	--	--	--	--	--	--	--

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

Autonomous Institute Affiliated to VTU

May 2023 Semester End Main Examinations

Programme: B.E.

Branch: Aerospace Engineering

Course Code: 22AS3PCMAE

Course: Materials for Aerospace Engineering

Semester: III

Duration: 3 hrs.

Max Marks: 100

Date: 17.05.2023

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

UNIT - I

- | | | | |
|---|----|--|---|
| 1 | a) | What are the most widely used materials for Aircraft construction? | 4 |
| | b) | Explain polymer with suitable examples? What are the different types of polymers and their uses? | 8 |
| | c) | Explain briefly the corrosion resistant materials and methods used in aircrafts. | 8 |

OR

- | | | | |
|---|----|--|---|
| 2 | a) | Write a note on thermal protection and materials used for it. | 8 |
| | b) | Write a brief note on emerging trends in aerospace materials and also list the newer trends required in aerospace constructions? | 5 |
| | c) | What are intermetallics? Explain | 7 |

UNIT – II

- | | | | |
|---|----|---|----|
| 3 | a) | Write note on Aluminium and list the grade of aluminum alloy used in aircraft industry, also enumerate their properties? | 10 |
| | b) | Write note on titanium and what is the composition of typical titanium alloy? Also, list the various parts prepared using titanium in aerospace applications. | 10 |

OR

- | | | | |
|---|----|---|----|
| 4 | a) | List different types of heat treatments of Aluminium alloy and also write a note on surface treatments. | 10 |
| | b) | Write note on Welding and Machining Titanium alloys. | 5 |
| | c) | What are different copper alloys used in aerospace industry. | 5 |

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 - III

- | | | | |
|---|----|--|----|
| 5 | a) | Enumerate the role of ferrous materials in aircraft constructions? | 5 |
| | b) | Write note on maraging steels. | 5 |
| | c) | Write a note on Iron and cobalt based super alloys. | 10 |

UNIT - IV

- | | | | |
|---|----|---|---|
| 6 | a) | List the traditional ceramics and the most modern advanced ceramic materials | 6 |
| | b) | With neat sketch explain the fabrication process of injection moulding for MMC. | 8 |
| | c) | Write note on polymer composites applications in aerospace vehicle design. | 6 |

UNIT - V

- | | | | |
|---|----|---|---|
| 7 | a) | With neat sketch explain difference between linear and non-linear elastic properties. | 8 |
| | b) | With neat sketch explain Bauschinger's effect. | 8 |
| | c) | Write brief note on characterization at high temperature | 4 |
