

# 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: 19AE3DCMTA**

**Course: Manufacturing Technology for Aerospace Engg.**

**Semester: III**

**Duration: 3 hrs.**

**Max Marks: 100**

**Date: 15.09.2023**

### Instructions:

1. Draw figures wherever necessary.
2. Assume suitable data wherever necessary.

### UNIT - I

1. a) Which of the primary manufacturing processes is most suitable for the products listed below? Explain each of them in brief. (a) Crankshaft, (b) I-sections, (c) Steel wires, (d) Bevel gears, (e) Metal rods. **10**  
 b) Explain the characteristics of sand mould. **4**  
 c) Describe the casting defects developed due to entrainment of gases. Draw neat sketches and suggest the remedies for these defects. **6**

### UNIT - II

2. a) Explain with the sketch the various roller arrangements. State their purposes. **10**  
 b) Distinguish clearly between embossing and coining. **4**  
 c) Discuss the Ultrasonic Welding process along with its applications. **6**

### UNIT - III

3. a) State the differences between single-point cutting tool and multi-point cutting tool. **6**  
 b) Write down Taylor's tool life equation identifying each term in it. Which are the other methods used for measuring the tool life? **6**  
 c) Discuss briefly the Water Jet Machining process. Explain how it can be made more effective. **8**

### OR

4. a) Explain the various types of grinding wheels. **6**  
 b) Write a short note on cutting fluids used during the machining operations. **7**

c) Discuss the principle of LBM with a neat sketch.

7

#### **UNIT - IV**

5. a) Distinguish clearly between CNC and DNC machines.

7

b) Explain the LOM process with a neat sketch.

7

c) Briefly discuss on-demand manufacturing process.

6

#### **UNIT - V**

6. a) Highlight the characteristics of Quality Management System in Aerospace Industry. State its benefits.

7

b) Discuss the role of the assembly line in manufacturing an aircraft.

7

c) Explain briefly the extrusion process for gear manufacturing.

6

#### **OR**

7. a) Explain the manufacturing processes of the combustion chamber, turbine blades/discs, and exhaust system of a typical jet engine.

8

b) Illustrate the gear cutting process using a shaper cutter.

6

c) Discuss how the quality of a product is assured in a typical manufacturing process.

6

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