

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

Autonomous Institute Affiliated to VTU

## May 2023 Semester End Main Examinations

**Programme: B.E.**

**Branch: Industrial Engineering and Management**

**Course Code: 22IM3PCMAP**

**Course: Manufacturing Process**

**Semester: III**

**Duration: 3 hrs.**

**Max Marks: 100**

**Date: 19.05.2023**

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

### UNIT - I

- 1 a) Draw a Merchant's Circle Diagram to resolve the cutting forces in Turning using a single point cutting tool. **06**
- b) What are the properties that a good cutting tool material should possess? Explain. **06**
- c) In a machining experiment, tool life was found to vary with the cutting speed in the following manner: **08**

Cutting speed (m/min)	Tool life (minutes)
60	81
90	36

- i) Identify the Tool Life equation that is to be used to find the value of exponent 'n' and the constant 'C'.
- ii) Find n & C.

### OR

- 2 a) Identify any six key parts of a lathe and explain the function of each one of them. **06**
- b) What is the effect of heat generated while machining? Explain. **06**
- c) Calculate the time for drilling a hole of 20mm dia. in a workpiece 50mm thick when the cutting speed is 10mm/min and feed 0.2 mm/rev and length of approach is 4mm. **08**

### UNIT - II

- 3 a) List and explain the criteria for selection of a suitable pattern making material? **06**
- b) What are the constituents of a Moulding Sand? Explain the importance of each one of them. **06**

**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.

- c) Name and explain the importance of any four sand tests for a moulding sand. **08**

**OR**

- 4 a) Explain Centrifugal Casting process and its variants? When compared with Continuous Casting process explain briefly its importance? **06**
- b) What are the typical moulding problems confronted in foundry? Explain. **06**
- c) How are moulding processes classified based on the methods used? Explain each of them briefly. **08**

**UNIT - III**

- 5 a) What is the need for adopting NDT for inspection in metal working industry? **06**
- b) List and explain the role of process parameters of USM. **06**
- c) Explain (Any two) : i) Magnetic Particle Test ii) Eddy Current Test iii) Ultrasonic Inspection. **08**

**UNIT - IV**

- 6 a) What is Arc Welding? Explain the process behind 'striking of Arc' and its sustenance? **06**
- b) Explain the metallurgical changes that take place in the metal during welding. **06**
- c) How is Resistance Welding carried out? Mention and explain its types? **08**

**UNIT - V**

- 7 a) What are the applications of Forging? Describe the process with neat sketches. **10**
- b) What are the different types of Abrasives used in Grinding? **10**

\*\*\*\*\*