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

Autonomous Institute Affiliated to VTU

May 2023 Semester End Main Examinations

Programme: B.E.

Semester: III

Branch: Industrial Engineering and Management

Duration: 3 hrs.

Course Code: 22IM3PCMAP

Max Marks: 100

Course: Manufacturing Process

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**
