

**P.E.S. College of Engineering, Mandya - 571 401***(An Autonomous Institution affiliated to VTU, Belagavi)***Fourth Semester, B.E. - Automobile Engineering****Semester End Examination; Sep. / Oct. - 2023****Manufacturing Process - II**

Time: 3 hrs

Max. Marks: 100

Course Outcomes*The Students will be able to:**CO1: Apply the concept of metal forming processes, types and applications.**CO2: Apply the knowledge of metal forming processes for production of engineering parts.**CO3: Analyse the various process parameters in metal forming processes.**CO4: Make use of experimental data for writing a report as an individual or as a team member to communicate effectively.***Note: I) PART - A is compulsory. Two marks for each question.****II) PART - B: Answer any Two sub questions (from a, b, c) for a Maximum of 18 marks from each unit.**

Q. No.	Questions	Marks	BLs	COs	POs
I : PART - A		10			
1 a.	What are the factors, which affects the temperature of the work pieces?	2	L1	CO1	PO1
b.	What is dynamic recovery?	2	L1	CO2	PO1
c.	Give the expression for the punch force during the formation of deep-drawn cup.	2	L1	CO2	PO1
d.	Define explosive forming.	2	L1	CO1	PO1
e.	Explain sintering process.	2	L1	CO2	PO1
II : PART - B		90			
UNIT - I		18			
2 a.	Provide a brief overview of the classification of metal working process.	9	L2	CO1	PO1
b.	Discuss the differences between hot forming and cold forming process.	9	L2	CO2	PO1
c.	List and explain the various parameters that effects forming process.	9	L1	CO1	PO1
UNIT - II		18			
3 a.	Describe forging process and classify the different forging processes.	9	L2	CO2	PO1
b.	With neat sketch, briefly elaborate the following rolling mills:				
	i) Tandem Mill	9	L2	CO2	PO1
	ii) Planetary Mill				
c.	Explain the causes of rolling defects and suggest remedies to mitigate them.	9	L1	CO3	PO2

Contd...2

UNIT - III**18**

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|------|---|---|----|-----|-----|
| 4 a. | What are the principal variables, which influence the force required to cause extrusion? Explain briefly. | 9 | L1 | CO3 | PO2 |
| b. | With a neat sketch, explain seamless tube extrusion. | 9 | L2 | CO2 | PO1 |
| c. | Elaborate with a neat schematic drawing of a drawbench and cross section of a drawing die. | 9 | L1 | CO3 | PO2 |

UNIT - IV**18**

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|------|--|---|----|-----|-----|
| 5 a. | Explain how does a forming limit criterion help in controlling failure in sheet-metal forming? | 9 | L2 | CO3 | PO2 |
| b. | Discuss springback factor with the help of neat diagram. | 9 | L2 | CO1 | PO1 |
| c. | With a neat diagram, explain the electromagnetic forming process. | 9 | L2 | CO3 | PO2 |

UNIT - V**18**

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|------|--|---|----|-----|-----|
| 6 a. | Discuss the characteristic of metal powder. | 9 | L2 | CO2 | PO1 |
| b. | Discuss the different types of isostatic pressing techniques used in the manufacturing industry. | 9 | L2 | CO3 | PO2 |
| c. | Give the advantages, disadvantages and application of powder metallurgy. | 9 | L2 | CO2 | PO1 |

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