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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Fourth Semester, B. E. - Mechanical Engineering

Semester End Examination; August - 2023

Manufacturing Process - II

Time: 3 hrs *Max. Marks: 100*

Course Outcomes

The Students will be able to:

CO1 - Describe different metal working processes and its applications.

CO2 - Illustrate metal working processes.

CO3 - Analyse stresses and strain rate in metal working processes.

CO4 - Explain powder metallurgy process.

CO5 - Discuss processing of plastics and ceramics.

***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 characteristics of wrought products?	2	L1	CO1	PO1,2
b.	Define friction hill in forging.	2	L1	CO2	PO1,2
c.	What is hydrostatic extrusion?	2	L1	CO2	PO1,2
d.	What is deep drawing?	2	L1	CO2	PO1,2
e.	List the application of powder metallurgy components.	2	L1	CO4	PO1,2
	II : PART - B	**90**			
	UNIT - I	**18**			
2 a.	With neat sketches, explain the classification of metal working process on the basis of force applied.	9	L2	CO1	PO1,2
b.	Explain briefly the concept of biaxial and triaxial stress.	9	L2	CO3	PO1,2
c.	Discuss the effect of temperature and strain rate in metal working process.	9	L2	CO2	PO1,2
	UNIT - II	**18**			
3 a.	With neat sketches, explain the defects in forged components.	9	L2	CO1	PO1,2
b.	Sketch and explain three high mill and cluster mill.	9	L2	CO2	PO1,2
c.	Explain the effects of front and back tensions in rolling.	9	L2	CO2	PO1,2
	UNIT - III	**18**			
4 a.	Differentiate between direct and indirect metal extrusion process with sketches.	9	L2	CO2	PO1,2
b.	List and explain the variables involved in the extrusion process.	9	L2	CO2	PO1,2
c.	Discuss optimal die angle and dead zone formation in drawing.	9	L2	CO2	PO1,2

Contd… 2

	UNIT - IV	**18**				
5 a.	Explain with neat sketch the working of compound die arrangement in sheet metal process.	9	L2	CO2	PO1,2	
b.	With a neat diagram, explain open back inclinable press.	9	L2	CO2	PO1,2	
c.	Discuss stretch forming and roll bending with neat sketches.	9	L2	CO2	PO1,2	
	UNIT - V	**18**				
6 a.	With a neat sketch, explain any two methods of production of metal powders.	9	L2	CO4	PO1,2	
b.	Explain any five characteristics of metal powder.	9	L2	CO4	PO1,2	
c.	Briefly explain the processing of elastomers and ceramics.	9	L2	CO5	PO1,2	

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