CONTROLLER OF EXAMINATIONS ★ ADDITIONAL AU CHENNAI 600 025

Roll No. | | | | | | | | | | |

ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

B.E. / B. Tech / B. Arch (Full Time) - END SEMESTER EXAMINATIONS, April / May 2025

Manufacturing

V Semester

MF5502 – Metal and Powder forming

(Regulation 2019)

Time: 3 hrs Max. Marks: 100

CO 1	To describe types of deformations and classification of forming processes
CO 2	To classify and explain bulk forming processes
CO 3	To describe sheet metal forming processes
CO 4	To distinguish differences between conventional forming and special forming processes
CO 5	To elaborate various stages involved in the powder forming processes

BL – Bloom's Taxonomy Levels

(L1 - Remembering, L2 - Understanding, L3 - Applying, L4 - Analyzing, L5 - Evaluating, L6 - Creating)

PART- A (10 x 2 = 20 Marks)

(Answer all Questions)

Q. No.	Questions	Marks	CO	BL
1	Give any two advantages of cold working.	2	CO 1	L1
2	What is work hardening?	2	CO 1	L1
3	Define peak pressure in rolling operation.	2	CO 2	L1
4	Why center burst is occurring in the extrusion process.	2	CO 2	L2
5	Define spring back in bending.	2	CO 3	L2
6	What is metal spinning process?	2	CO 3	L2
7	Differentiate between hot and cold Isostatic pressing.	2	CO 4	L2
8	Write the applications of explosive forming process.	2	CO 4	L1
9	What is the method used for production of spherical shape metal particles and state it advantageous?	2	CO 5	L2
10	When do you select the powder forging process?	2	CO 5	L2

PART- B (5 x 13 = 65 Marks)

Q. No.	Questions	Marks	CO	BL
11 (a)	Explain cold, warm, and hot working processes with their advantages and disadvantages.	13	CO1	L3
	OR			
11 (b)	Explain the deformation characteristics of aluminum metal under tensile loading. Draw the stress-strain curve of aluminum metal and describe the terms associated with it.	13	CO1	L3
12 (a)	Explain the rolling process with its types and the effects of friction on the process.	13	CO2	L3

	OR			
12 (b)	Demonstrate the method of swaging with neat diagrams. Give some applications and the pros and cons of the process.	13	CO2	L3
13 (a)	Explain the Electro Magnetic Forming process. Give some applications and the pros and cons of the process.	13	CO3	L3
	OR			
13 (b)	Explain super plastic forming process with a neat sketch.	13	CO3	L3
14 a)	Describe the Orbital forging with appropriate diagrams. State the advantages and disadvantages. Give some applications.	13	CO4	L4
	OR			
14 (b)	Demonstrate the method of Incremental forming on sheet metal with neat diagrams.	13	CO4	L4
15 (a)	Explain the secondary and finishing operations in powder metallurgy manufactured parts with suitable examples.	13	CO5	L3
	OR			
15 (b)	List down and explain different types of sintering mechanisms.	13	CO5	L3

PART- C (1 x 15 = 15 Marks)
(Q.No.16 is compulsory)

Q. No.	Questions	Marks	CO	BL
16.	Explain the importance of formability of sheet metals in manufacturing automobile body parts. What problems can occur if the material has poor formability? Suggest ways to improve formability during sheet metal forming.	15	CO5	L5