

Roll No.

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

B.E /B.TECH (FULL TIME) END SEMESTER EXAMINATIONS, APRIL/MAY 2019

MANUFACTURING ENGINEERING

IV Semester

MF 7402 METAL FORMING AND POWDER METALLURGY

(Regulation 2015)

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

PART- A (10 x 2 = 20 Marks)

1. What is meant by strain hardening?
2. Differentiate hot and cold working (any four points).
3. How to avoid barreling effect during forming?
4. State any two advantages and disadvantages of flash in forging.
5. State any four differences between drawing and deep drawing.
6. Name any four guidelines in the design of sheet metal forming operation.
7. State any four differences between rubber pad and water hammer forming.
8. Name any four test to determine the formability of sheet metal.
9. What is the purpose of blending in powder metallurgy (PM) processing?
10. Name any four secondary operations that are carried out in PM.



PART – B (5 x 13 = 65)

11a. Describe the following with neat sketches

- (i) Differences between ductile fracture and brittle fracture (7)
- (ii) Imperfections in the crystal structure. (6)

OR

11b. Define engineering stress, engineering strain, true stress and true strain with equations. (13)

12a. Write briefly about the following with neat sketches.

- (i) Impact extrusion (7)
- (ii) Manufacturing stages involved in the making of Steel chair (6)

OR

12b. Write briefly about the following with neat sketches.

- (i) Mannesmann process (7)
- (ii) Manufacturing stages involved in the making of Railway track (6)

13a (i). Write briefly about the stages involved in the making of helical spring with sketch (13)

OR

13b. (i) Write briefly about super plastic forming process. (7)

- (ii) Write briefly about the manufacturing stages involved in the making of LPG gas cylinder. (6)

14a. State the differences between hot and cold isostatic pressing with neat sketches.

OR

14b. Explain the differences between extrusion and high speed extrusion with simple sketches.

15a. With simple sketches briefly explain the process of sintering in the making of powder metallurgy components.

OR

15b. Explain the various design consideration for powder metallurgy with neat sketches.

Part – C (1 x 15 = 15 marks)

16. Explain with neat sketches the manufacturing aspects involved in the making of

- (i) Crank Shaft
- (ii) Leaf Spring

