

# **Powder Metallurgy**

## **(MT410602)**

Program: B.Tech.	Branch: Metallurgical Engineering
Subject: Powder Metallurgy	Semester: VI
Subject Code:	MT410602

### **2. CONTENT:**

#### **Unit-1**

Introduction: Historical and modern developments in P/M. Advantages limitations and applications of Powder Metallurgy.

Characteristics of metal powder in terms of particle size , shape and size distribution, Characteristics of powder mass such as apparent density, tap density, flow rate, friction conditions. Properties of green compacts and sintered compacts.

#### **Unit-II**

Important methods of metal powder manufacturing like machining, milling, atomization, electrodeposition, reduction from oxide, carbonyl process, production of alloy powders, new development.

Powder conditioning, fundamentals of powder compaction, density distribution in green compacts, types of compaction presses, compaction tooling and role of lubricants. Single and double die compaction, isostatic pressing, hot pressing.

#### **Unit – III**

Powder rolling, powder forging, powder extrusion and explosive forming technique Definition of sintering, stages of sintering, effect of variables on sintering, sintering atmospheres and sintering furnaces.

#### **Unit –IV**

Mechanism of sintering, liquid-phase sintering, infiltration process. Study of sintered bearings, cutting tools, and metallic filters. Study of friction and antifriction parts and electrical contact materials.

### **3. TEXT BOOKS:**

1. Introduction to Powder Metallurgy by A.K.Sinha, 2011.
2. Principles of powder metallurgy by W.D. Jones, 1960.

### **4. REFERENCE BOOKS:**

1. Handbook of powder metallurgy by Henry Herman Hausner, 1973.
2. Powder Metallurgy Technology by G. S. Upadhyaya, 2002.