PAE4I102 AIRCRAFT MATERIAL & PRODUCTION

UNIT I. AIRCRAFT MATERIALS-FERROUS- NON -FERROUS

Characteristics,properties and identification of common alloy steels used in aircraft, Heat treatment and application of alloy steels, Characteristics,properties and identification of common non-ferrous materials used in aircraft , Heat treatment and application of non-ferrous materials

UNIT II. COMPOSITE AND NON -METALLIC

Characteristics,properties and identification of common composite and non-metallic materials,other than wood used in aircraft., Sealent and bonding agent, Construction methods of wooden airframe structures, Characteristics,properties and types of wood and glue used inaeroplanes , Characteristics,properties and types offabricusedinaeroplanes

UNIT III MACHIINING

General principles (with schematic diagrams only) of working and commonly performed operations in the following machines: Lathe, Shaper, Planer, Horizontal milling machine, Universal drilling machine, Cylindrical grinding machine, Capstan and Turret lathe. Basics of CNC machines. General principles and applications of the following processes: Abrasive jet machining, Ultrasonic machining, Electric discharge machining, Electro chemical machining, Plasma are machining, Electron beam machining and Laser beam machining.

UNIT IV FORMING AND SHAPING OF PLASTICS

Types of plastics-characteristics of the forming and shaping processes-Moulding of Thermoplastics-working principles and typical applications of Injection moulding- Thermoforming-processing of thermosets-working principles and typical applications-

UNIT V METAL FORMING AND POWDER METALLURGY

Principles and applications of the following processes: Forging, Rolling, Extrusion, Wire

drawing and Spinning, Powder metallurgy-Principal steps involved advantages. Disadvantages and limitations of powder metallurgy

TEXT BOOK:

1. Tittertion , Aircraft Materials And Processes
2. Harija choudry, Elements of workshop Technology, vol. I and II Media promoters and publishers pvt., Ltd., Mumbai, 2001.

REFERENCES:

1. R. K. Jain and S. C. Gupta, production Technology, Khanna Publishers. 16th Edition, 2001.
2. H. M. T. production technology-Hand book, Tata Mc Graw-Hill, 2000.
3. Roy. A. Linberg, process and materials of manufacturing technology, PHI, 2000.
4. M. Adithan and A. B. Cupta, manufacturing technology, New Age, 1996.
5. Serope Kalpajian, Steven R. Schimid, Manuyfacturing Engineering and Technology, Pearson Education, Inc.2002 (second Indian Reprint)