		prisms, pyramids, cylinders and cones 23.9 Study of Assembly Drawing	04 Hours
24	**Plastics Testing Lab** *(Understand the standards used and procedure for testing of plastics materials and plastic products)*	24.1 Determination of density of plastics. 24.2 Determination of melt flow index of plastics. 24.3 Determination of moisture contents. 24.4 Determination of carbon contents. 24.5 Determination of filler content. 24.6 Identification of plastics by simple methods. 24.7 Determination of water absorption. 24.8 Determination of Hardness (Rockwell, Shore A&D, Barcol). 24.9 Specimen preparation methods. 24.10 Introduction to product testing - Pipe testing.	06 Hours 05 Hours 03 Hours 04 Hours 04 Hours 08 Hours 06 Hours 04 Hours 06 Hours 08 Hours
25	**Engineering materials and Heat Treatment** *(Overview of key concepts of structure and properties of the metals and alloys. Role of heat treatment to suit specific requirement and testing of the properties for ascertaining)*	25.1 Understanding different structure, Unit cell and calculation of atoms/Coordination number/packing factor 25.2 Describe different types of cast iron and steel application in Engineering field. Identify cast iron, steel, and alloys steel as-per their uses. 25.3 Select nonferrous metals and understand their uses 25.4 Study of nonferrous alloys and its applications 25.5 Describe phase transformation stages in iron with respect to the temperature and effect of heat treatment on properties of iron. 25.6 Draw the iron-carbon equilibrium and TTT diagram and explain briefly the effect of temperature on microstructure of steel and iron. 25.7 Explain different types of microstructure with neat sketch. 25.8 Explain the significance of heat treatment in the Manufacturing process. 25.9 Explain the different types of heat treatment process. 25.10 Study on Advanced Heat treatment techniques 25.11 escribe Mechanical Properties and its Testing	
26	**Plastics Product and Mould Design** *(Describe the concepts product design for plastic parts. Study of various mold designs based on materials and applications)*	26.1 Knowledge of product design features and its application while designing for plastic parts. 26.2 To study injection mold machine specification 26.3 General injection mold construction and its design features 26.4 Exposure on different mold parts and its functions 26.5 Study of external undercut molds, spilt molds, cam track molds 26.6 Study of internal undercut-form pin-collapsible core - loose cores, threaded inserts - internal and external threads 26.7 Describe the blow mold and extrusion die design & its considerations 26.8 Understanding Compression and transfer mold design and Its considerations.	
27	**Machine Shop Technology-II** *(Role of milling machines and Grinding machines on shop floor)*	27.1 Identifying milling machine parts, cutters and work holding/tool holding devices and their purposes 27.2 Cutting parameters 27.3 Study on different milling operation 27.4 Different milling methods and its applications 27.5 Knowledge on coolants and lubricants used	

		27.6 Maintenance and Safety precaution while working on the machine 27.7 Identifying surface grinding parts, Types of Grinding and working principle 27.8 Selection of grinding wheels 27.9 Knowledge on balancing, glazing and loading of wheels 27.10 Speed and feed parameters 27.11 Study on attachments used 27.12 Maintenance and Safety precaution while working on the machine 27.13 Identifying surface and cylindrical grinding parts, Types and working principle 27.14 Selection of grinding wheels and its shapes/ sizes for different operations 27.15 Knowledge on balancing, glazing and loading of wheels 27.16 Speed and feed parameters 27.17 Study on attachments used 27.18 Maintenance and Safety precaution while working on the machine 27.19 Identifying Pedestal and Tool and cutter grinding machine parts, Types and working principle 27.20 Selection of grinding wheels for different materials 27.21 Knowledge on single and multi-point cutter and drill bits 27.22 Study on accessories and attachments used 27.23 Maintenance and Safety precaution while working on the machine	
28	**Plastics Processing Techniques** *(Study of different processing method, understands related operations, monitor process parameters and troubleshoot the process/product)*	28.1 Introduction to Injection Molding – machine specifications - parts and their functions. 28.2 Process variables. Influence of processing parameters on the quality of the moulding - Setting of moulding conditions for a particular job 28.3 Causes & remedies of common moulding faults. 28.4 Operator safety aspects and routine quality control involved Safety procedures to be adopted to complete mould removal process 28.5 Introduction to advanced injection molding - gas assisted, reaction injection and multi-colour 28.6 Knowledge of Blow Molding –types, parison programming, setting and operation –quality control and operator safety 28.7 Knowledge of Extrusion process- machine parts and their functions 28.8 Study of processing parameters and their effect on product quality 28.9 Understanding of Causes and remedies of the common extrusion faults 28.10 Knowledge of film, pipe, sheet, profile and coating-dies for different processes, process control systems-process variables- quality control and operator safety 28.11 Knowledge of Compression And Transfer Molding Process – principles- effect of molding pressure, mold temperature, defects and their causes- quality control 28.12 Knowledge of Thermoforming methods, Thermoforming moulds, Thermoforming equipment	