

## ***DIPLOMA (INFORMATION TECHNOLOGY) – PART TWO***

<b>PART TWO</b>			
<b>S. No.</b>	<b>Name of Module</b>	<b>Credits</b>	<b>Total Marks</b>
1	Applied Mechanics	4	100
2	Engineering Drawing	4	100
3	Concepts in Information Technology	5	100
4	Basics of Mechanical Engineering	4	100
5	Workshop Technology	4	100
<b>Total</b>		<b>21</b>	

### **Module Name:** Applied Mechanics

- 1. Introduction:** Concept of Mechanics and Applied Mechanics, Explanation of Mechanics and Applied Mechanics, Its Importance and Necessity, Giving Suitable Examples on Bodies at Rest and in Motion, Explanation of Branches of this Subject, Concept of Rigid Bodies.
- 2. Laws of Forces:** Force and its Effects, Units and Measurement of Force, Characteristics of Force Vector Representation, Bow's Notation, Types of Forces, Action and Reaction, Tension, Thrust and Shear Force, Force Systems: Coplanar and Space Force Systems, Coplanar Concurrent and Non-Concurrent Forces, Free Body Diagrams, Resultant and Components Concept of Equilibrium, Parallelogram Law of Forces, Equilibrium of Two Forces, Superposition and Transmissibility of Forces, Newton's Third Law, Triangle of Forces, Different Cases of Concurrent Coplanar, Two Force Systems, Extension of Parallelogram Law and Triangle Law to Many Forces Acting at One Point-Polygon Law of Forces, Method of Resolution into Orthogonal Components for Finding the Resultant, Graphical Methods, Special Case of Three Concurrent, Coplanar Forces, Lami's Theorem.
- 3. Moments:** Concept of Moment, Varignon's Theorem- Statement Only, Principle of Moments- Application of Moments to Simple Mechanism, Parallel Forces, Calculation of their Resultant, Concept of Couple Properties and Effect, Moving a Force Parallel to its Line of Action, General Cases of Coplanar Force System, General Conditions of Equilibrium of Bodies Under Coplanar Forces.

4. **Friction:** Concept of Friction, Laws of Friction, Limiting Friction and Coefficient of Friction, Sliding Friction.
5. **Centre of Gravity:** Concept of Gravity, Gravitational Force, Centroid and Center of Gravity, Centroid for Regular Lamina and Center of Gravity for Regular Solids, Position of Center of Gravity of Compound Bodies and Centroid of Composition Area, CG of Bodies with Portions Removed.
6. **Laws of Motion:** Concept of Momentum, Newton's Laws of Motion, Their Application, Derivation of Force Equation from Second Law of Motion, Numerical Problems on Second Law of Motion, Piles, Lifts, Bodies Tied with String, Newton's Third Law of Motion and Numerical Problems Based on it, Conservation of Momentum, Impulsive Force (Definition Only).
7. **Simple Machines:** Concept of Machine, Mechanical Advantage, Velocity Ratio and Efficiency of a Machine, their Relationship, Law of Machine, Simple Machines (Lever, Wheel and Axle, Pulleys, Jacks Winch Crabs Only).

**Module Name:** Engineering Drawing

1. **Drawing Office Practice:** Importance of Engineering Drawing, Importance of Legible Lettering and Numbering, Dimensioning, Scales, Geometrical Construction, Conics, Geometric Curves.
2. **Orthographic Projections, Projection of Simple Objects in three views.**
3. **Projection of Solids and Section of Solids:** Projection of Simple Solids, Sectional View.
4. **Pictorial Drawing:** Isometric Drawings.
5. **Development of Surfaces.**
6. **Practice on AutoCAD:** AutoCAD Commands, Exercise.

**Module Name:** Concepts in Information Technology

1. **Information Concepts & Processing:** Definition of Information, Data VS Information, Introduction to Information System, Information Representation Digital Media, Images, Graphics, Animation, Audio, Video etc. Need a Value & Quality of Information the concept of Information entropy & Numerical.
2. **Computer Appreciation:** Definition of electronic Computer, History, Generation, Characteristics & Application of Computers, Classification of Computers, RAM, ROM, Computer Hardware, CPU, Various I/O Devices, Peripherals, Storage Media, Software Definition and Concepts.
3. **Data Communication & Networks:** Computer Networks, Networking of Computers, Introduction to LAN, WAN, MAN, Network Topologies, Basic Concepts in Computer Networks, Introduction to GPRS, CDMA, GSM & FM Technologies.

4. **Introduction to Internet Technologies:** HTML, DHTML, WWW, FTP, TELNET, Web Browser, Net Surfing, Search Engines, E-Mail, ISP, E-Commerce, Public Key, Private Key, Safety of Business Transaction on Web.
5. **Concepts in Operating System:** Elementary Concepts in Operating System, GUI, Introduction to DOS, MS Windows.

**Module Name:** Basics of Mechanical Engineering

1. **Source of Energy:** Introduction, Types of Energy.
2. **Steam and its Properties:** Introduction to Steam, Terms Related to Steam Formation.
3. **Boiler:** Classification of Boilers, Merits and Demerits, Boiler Mounting.
4. **Prime Movers:** Definition of Prime Movers, Impulse and Reaction Turbines, Open and Close Cycle Gas Turbine.
5. **Internal Combustion Engines:** Heat Engine, External and Internal Combustion Engine, Classification of IC Engines, Principle Parts of IC Engines.
6. **Refrigeration and Air Conditioning:** Types of Refrigeration System, VCRS, Air Conditioning.
7. **Welding, Soldering and Brazing:** Welding, Classification of Plastic and Fusion Welding, Arc Welding, Types of Electrode, Brazing and Soldering.
8. **Machine Tools:** Introduction, Classification of Lathes, Major Parts of a Lathe, Specification of Lathe, Drilling Machine Operations, Milling and Down Milling, Grinding Machines.
9. **Lubrication and Bearings:** Introduction to Lubrication, Function and Properties of Lubricants Classification of Bearings.
10. **Power Transmission:** Belt Drives, Belt Material, Gear Train, Types of Gears, Compound Gear Train.
11. **Mechatronics:** Concept of Mechatronics System, Elements of Measurement System, Types of Control Systems, Microprocessor Based Controllers.

**Module Name:** Workshop Technology

1. **Carpentry and Painting Shop:** Introduction to Wood Work, Preparation of Dovetail Joint, Preparation of Mitre Joint, Preparation of Lengthening Joint etc...
2. **Fitting Shop:** Drill, Taps and Dies, Using a Hand Tap, Care and Maintenance of Measuring Tools, Height Gauge, Files, Preparation of Job Involving Threads, Using a Pipe Threading Set, Care of Pipe Cutters and Threading Sets.
3. **Welding Shop:** Gas Welding, Operation and Maintenance of Oxygas Equipment, Equipment Setup, Maintaining the Equipment, Oxygas Welding Techniques, Common Welding Joints Generally Made by Gas Welding, Proper Edge Preparation and Fit Up, Welding Procedure.

4. **Electric Shop:** Importance of Three Phase Wiring and Its Effectiveness, Two-Wattmeter Method of Power Measurement in a Three Phase Circuit, Connecting Single Energy Meter and testing it, Reading and Working out the Power and costing of Energy in a Single Phase Circuit.
5. **Electronic Shop:** Wire Rope, Various Types of Plugs, Sockets, Connectors Suitable for General Purpose Audio Video Use, Demonstrate the skill to make Facilities Solder Joint, Installation and Soldering of Printed Circuit Components, Soldering of PCB Components, Application of Solder and Soldering Iron Tip.