Scheme of Teaching and Examination for
VI Semester DIPLOMA in ELECTRONICS ENGINEERING

THEORY

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME		EXAMINATION - SCHEME					
			Periods per Week	Periods in one Session (Year)	Hours of Exam.	Terminal Exam. (A) Marks	Final Exam. (B) Marks	Total Marks (A+B)	Pass Marks Final Exam.	Pass Marks in the Subject
1.	Professional Studies & Entrepreneurship	00601	06	60	03	20	80	100	26	36
2.	CADD	21602	06	60	03	20	80	100	26	36
3.	Digital Electronics-II	21603	06	60	03	20	80	100	26	36
4.	Signal System	21604	06	50	03	20	80	100	26	36
5.	Elective*		06	60	03	20	80	100	26	36
	Advanced Microprocessor	21605A								
	Advanced Instrumentation & Measurement	21605B								
	Mining Electronics	21605C								
	Medical Electronics	21605D								
	Microwave Engineering	21605E								
Total:-			30					**500**		

PRACTICAL

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME		EXAMINATION – SCHEME					
			Periods per Week	Periods in one Session (Year)	Hours of Exam.	Marks Internal Exam. (A)	Marks External Exam. (B)	Total Marks (A+B)	Pass Marks Final Exam.	Pass Marks in the Subject
6.	CADD Lab.	21606	08	60	03	10	40	50	16	21
Total:-			08					**50**		

SESSIONAL

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME		EXAMINATION - SCHEME			
			Periods per Week	Periods in One Session (Year)	Marks of Internal Examiner (X)	Marks of External Examiner (Y)	Total Marks (X+Y)	Pass Marks in the Subject
7.	Professional Studies & Entrepreneurship	00607	04	50	20	30	50	25
8.	Digital Electronics & M.P. Lab.	21608	--	--	20	30	50	25
9.	Project Work & Its presentation in Seminar	21609	--	--	40	60	100	50
Total:-			04				**200**	

Total Periods per Week	**42**	**Total Marks**	**750**

PROFESSIONAL STUDIES & ENTREPRENEURSHIP

Subject Code 00601	Theory			No of Period in one session : 60		
	No. of Periods Per Week			Full Marks	:	100
	L	T	P/S	Annual Exam.	:	80
	06	-	-	Internal Exam.	:	20

Rationale:

The paper has been introduced to achieve dual purpose for the students. Firstly, this course provides the basics of Professional management and secondly it also prepares the student to develop self reliance by becoming an entrepreneur.

This makes them conversant with their duties and responsibility to make them successful in their career building by developing profession expertise.

Objectives:

With the input provided in this paper, the students will be able to :-

- Acquire basic knowledge of management.
- Understand the various area of management such as human resources, marketing, finance and commercial aspect, production & material management etc.
- Understand the benefit of becoming an entrepreneur.
- Handle a project efficiently and independently.
- To avail subsidies / grants / loan etc. from various of agencies.

PART-I: PROFESSIONAL STUDIES

TOPIC:

01 – INTRODUCTION: [05]

01.01 Professional Ethics:
Definition, Objective, Right & Wrong, Duty & Obligation

01.02 Management: [05]
Definition, Function and Objectives.

01.03 Leadership: [05]
Definition, Types – Autocratic, Democratic and Laissez – faire, Functions and Characteristics of Leadership.

01.04 Motivation : [05]
Definition, Types and Importance / Benefits

01.05 Forms of Business organization: [05]
Sole proprietorship, Partnership, Joint Stock company and Co-operative Societies.

01.06 Supervisor's/Technician's role: [05]
Concept of supervisory management, career needs, Role of Technicians in an organization.

PART-II: ENTREPRENEURSHIP

TOPIC:

02 – INTRODUCTION:

02.01 Entrepreneurship: [10]
Concept, Characteristics of a successful entrepreneurship, basic ingredients of entrepreneurship:
1. Finance 2. Technology 3. Sales and Marketing

02.02 Project Report: [10]
Meaning, Project Identification, Project Selection, Contents of a project Report, Techno-Economic Feasibility Report (TEFR), Market Survey.

02.03 Sources of Finance: [05]

Government, Commercial Banks, Financial institutions:
SIDBI – Small Industries development Bank of India
SFC – State Financial Corporations
IDBI – Industrial Development Bank of India
IFCI – Industrial Finance Corporation of India
ICICI – Industrial Credit Investment Corporation of India

02.04 Acts : [05]

Indian factories Act 1948 (Main Provision Only)
Consumers Protection Act 1986 (Main Provision Only)

<u>03</u> – <u>PROJECT WORK</u>:

As elaborated in Sessional Paper (**00607**).

Books Recommended :

1.	Essential of Management, Tata McGraw Hill, Publishing Company Ltd., New Delhi.	-	Herald Koonz & Cyril O' Donnel.
2.	Business Organization and Management, S. C. Chand and Company (Pvt.) Ltd., Ram Nagar, New Delhi	-	M. C. Shukla.
3.	Managerial Economics, Sultan Chand & Sons, New Delhi	-	R. L. Vashney & K. L. Maheshwari
4.	Project Appraisal and Follow up, Govind Prakashan, Mumbai.	-	D. P. Sharda
5.	Modern Marketing Management, Progressive Corporation Pvt. Ltd., P51, Mahatma Gandhi Road, Bombay-400 001	-	Dr. Rustam S. Davar
6.	A hand book for new entrepreneurs (with special reference to science and technology target group)	-	Entrepreneurship Development Institute of India, 83-A, Swastic Society Navrangpura, Ahmedabad, PIN-380 009.

Reference Books :

1.	Leadership in Organisation	-	Published by I.S.T.E. Mysore
2.	Motivation	-	Published by I.S.T.E. Mysore
3.	Motivation - I.I.T. Kanpur	-	Published by I.S.T.E. Mysore
4.	A Hand book on Project Appraisal and follow up, Govind Prakashan, 204, Saraswati Kunj, 90, S. V. Road, Goregoan, Bombay-400 062.	-	D. P. Sarda
5.	Bihar Industrial Policy	-	Government of Bihar, Department of Industries.
6.	Entrepreneurship Guide	-	Bihar State Financial Corporation, Fraser Road, Patna-800 001.

CADD

Subject Code 21602	Theory			No of Period in one session : 60		
	No. of Periods Per Week			Full Marks	:	100
	L	T	P/S	Annual Exam.	:	80
	06	-	-	Internal Exam.	:	20

Rationale :

Objective:

S.No.	Topics	Periods
01	Introduction.	(08)
02	Fundamental Properties.	(09)
03	Physical Parameter Modeling.	(09)
04	D. C. Analysis of Linear Network.	(06)
05	Solution of Simultaneous Equations.	(05)
06	D. C. Analysis of Non Linear Circuits.	(07)
07	Modeling of Semi Conductor Components.	(08)
08	Transient Analysis of Linear & Non Linear Circuits.	(08)
	Total :	**(60)**

CONTENTS:

TOPIC: 01 – INTRODUCTION: [08]

- 01.01 Device Modeling.
- 01.02 State of the Art of techniques.
- 01.03 Simulation in IC design.

TOPIC: 02 – FUNDAMENTAL PROPERTIES: [09]

- 02.01 Poissions Equation.
- 02.02 Continuity Equation.
- 02.03 Carrier Transport Equation.
- 02.04 Carrier concentration.

TOPIC: 03 – PHYSICAL PARAMETER MODELING: [09]

- 03.01 Carrier Mobility Modeling.
- 03.02 Carrier Generation & Recombination Modeling.
- 03.03 Thermal Generation Modeling.

TOPIC: 04- D. C. ANALYSIS OF LINEAR NETWORK: [06]

- 04.01 Introduction to common techniques.
- 04.02 Hybrid formulation technique.

TOPIC: 05 – SOLUTION OF SIMULTANEOUS EQUATIONS: [05]

- 05.01 Introduction to different techniques.
- 05.02 Gaussian Elimination.
- 05.03 L U decomposition.
- 05.04 Exploiting scarcity of matrices.

TOPIC: 06– D. C. ANALYSIS OF NON LINEAR CIRCUITS: **[07]**

06.01 Introduction non-linear equation.

06.02 Newton Rapson technique for many variable.

06.03 Linearised equivalent of non-linear circuits.

06.04 Linearised equivalent of hybrid formulation.

TOPIC: 07 – MODELING OF SEMI CONDUCTOR COMPONENTS: **[08]**

07.01 Modeling of P N Junction.

07.02 Modeling of various diodes.

07.03 Modeling of B J T.

07.04 Modeling of F E T.

TOPIC: 08 – TRANSIENT ANALYSIS OF LINEAR & NON LINEAR CIRCUITS: **[08]**

08.01 Sine small signal analysis.

08.02 Linear Formulation.

08.03 Steady State Formulation.

08.04 Numerical Solution of Ordinary Differential Equation.

08.05 Associated circuit models for inductor.

08.06 Associated circuit models for capacitor.

Books Recommended:

1. Computer Aided Analysis of Electronic Circuits. - Chua & Lin
2. Analysis & Simulation of Semi Conductor Devices. - Siefried & Selberher
3. Computer Aided Electronic Circuit Design. - Raghuram
4. AutoCAD. - Rice
5. AutoCAD. - Oumera
6. S P I C E. - Mannual

DIGITAL ELECTRONICS - II

Subject Code 21603	Theory			No of Period in one session : 60		
	No. of Periods Per Week			Full Marks	:	100
	L	T	P/S	Annual Exam.	:	80
	06	-	-	Internal Exam.	:	20

Rationale :

Objective:

S.No.	Topics	Periods
01	Multivibrator Circuit.	(08)
02	Linear and Non Linear Wave Shaping Circuits.	(06)
03	Memories.	(12)
04	Input / Output Devices.	(10)
05	A / D and D / A Convertion.	(12)
06	Compact Disks.	(04)
07	Digital Display.	(08)
	Total:	**(60)**

CONTENTS:

TOPIC: 01 – MULTIVIBRATOR CIRCUIT: [08]

01.01 Introduction.

01.02 Transistor and Multivibrator circuits.

01.03 F E T based Multivibrator circuits.

01.04 Schmitt Trigger circuit.

01.05 555 IC based above circuits.

01.06 CMOS based Multivibrator Circuits.

TOPIC: 02 – LINEAR AND NON LINEAR WAVE SHAPING CIRCUITS: [06]

02.01 Voltage comparater.

02.02 Voltage time base generator.

02.03 Current time base generator.

TOPIC: 03– MEMORIES: [12]

03.01 Classification in different aspects.

03.02 Semi conductor dynamic, static memories.

03.03 Shift register memory unit.

03.04 Magnetic core memories.

03.05 Magnetic tape.

03.06 Paper tapes.

03.07 Read only memories: PROM, EPROM.

03.08 EPROM Eraser.

03.09 Storage capacity.

TOPIC: 04 – INPUT / OUTPUT DEVICES: **[10]**

04.01 Punched Card.

04.02 Paper tape, Magnetic tape, Magnetic drum & recording devices.

04.03 Digital recording devices.

04.04 CRT Terminals.

04.05 Decoder, encoder and Multiplexer.

04.06 Serial and Parallel data transfer.

04.07 U A R T.

04.08 Bi-directional buffer.

04.09 Parity and encoder.

04.10 74150, 74156, 74139, 74155, 74151, 74246, ICs.

TOPIC: 05 – A / D AND D / A CONVERTION: **[12]**

05.01 Introduction.

05.02 Sampling theorem.

05.03 Weighted register D/A Converter.

05.04 R-2R Ladder D/A Converter.

05.05 Inverted ladder D/A converter.

05.06 A/D converter: parallel comparater, successive approx., counting, Dual slope type.

05.07 Sample and hold circuit.

TOPIC: 06 – COMPACT DISKS: **[04]**

06.01 Hard disk.

06.02 CD ROM.

06.03 CCD charged coupled devices.

06.04 Storage charge.

06.05 Storage capacity and transfer of charges.

TOPIC: 07– DIGITAL DISPLAY: **[08]**

07.01 LED, LCD, Light detectors displays.

07.02 Magnetic bubble display.

07.03 Seven segment display.

Books Recommended:

1. Digital Principle and Application. - Malvino and Leach.
2. Pulse and Digital Circuit. - Milman and Taub.
3. Digital Int. Circuits. - Taub and Schilling.

SIGNAL SYSTEM

Subject Code 21604	Theory			No of Period in one session : 60		
	No. of Periods Per Week			Full Marks	:	100
	L	T	P/S	Annual Exam.	:	80
	06	-	-	Internal Exam.	:	20

Rationale :

Objective:

S.No.	Topics	Periods
01	Signals & their representation.	(07)
02	Introduction to Linear System.	(05)
03	Fourier Series & Transforms.	(08)
04	Laplace Transforms.	(10)
05	Inverse Laplace Transformations.	(09)
06	Sampled-Data System & the Z-Transformations.	(12)
07	Mathematical modelling of physical systems.	(09)
	Total :	**(60)**

CONTENTS:

TOPIC: 01 – SIGNALS & THEIR REPRESENTATION: (07)

01.01 Basic Continuous time Signals.
01.02 Basic discrete time Signals.
01.03 Linear time invariant Signals.
01.04 Random Signals.

TOPIC: 02 – INTRODUCTION TO LINEAR SYSTEM: (05)

02.01 Introduction.
02.02 Linear System from a physical point of view
02.03 Linear System from a Mathematical point of view

TOPIC: 03– FOURIER SERIES & TRANSFORMS: (08)

03.01 Fourier series expansion.
03.02 Symmetry expansion.
03.03 Exponential form of Fourier series.
03.04 Fourier Integral & Fourier Transform.
03.05 Analysis by Fourier Methods.

TOPIC: 04 – LAPLACE TRANSFORMS: [10]

04.01 Introduction.
04.02 Conversion from F-transform to L-transform.
04.03 The shifting Theorem & its applications.
04.04 The gate function.
04.05 L-transform of periodic functions.
04.06 L-transform of operations.

TOPIC: 05 - INVERSE LAPLACE TRANSFORMATIONS: **[09]**

05.01 Introductions.

05.02 Heaviside's expansion Theorem.

05.03 Analysis of system response.

05.04 Initial & Final Value Theorem.

05.05 The convolution integral.

05.06 Tee Super position integral.

05.07 Inverse L-transformations of some irrational functions.

TOPIC: 06 – SAMPLED-DATA SYSTEM & THE Z-TRANSFORMATIONS: **[12]**

06.01 Introduction.

06.02 The Z-transformations.

06.03 Z-transformations of some important functions.

06.04 The shifting Theorem.

06.05 The initial & final value Theorem.

06.06 Introductions to difference equations.

06.07 Solution of difference equations.

TOPIC: 07– MATHEMATICAL MODELLING OF PHYSICAL SYSTEMS: **[09]**

07.01 System response & transfer function.

07.02 Block diagram representations.

07.03 Rule for block diagram transformations Signal flow graph.

07.04 Mason's gain formula & its applications.

Books Recommended:

1. Analysis of linear systems. - D. K. Cheng.
2. Circuit & System Analysis. - A. Paspoulis.
3. Signal & linear system. - Gabel & Roberts.
4. Communication System. - Haykins.
5. Signals and Systems, PHI. - A. Oppenheirn and A. Willsky.
6. Control System Engineering. - Nagrath & Gopal.

ADVANCED MICROPROCESSOR

Subject Code 21605A	Theory			No of Period in one session : 60		
	No. of Periods Per Week			Full Marks	:	100
	L	T	P/S	Annual Exam.	:	80
	06	-	-	Internal Exam.	:	20

Rationale :

Objective:

S.No.	Topics	Periods
01	Introduction to 16 BIT Microprocessor.	
02	Data and Address-BUS Configuration.	
03	Addressing Modes.	
04	Interrupt Processing.	
05	Peripheral Interfacing Chips.	
06	Architecture of 68000 Motorola processor in detail.	
07	Organisation of Instruction Sets.	
08	Architecture for standard peripheral devices.	
09	I/O Control.	
10	System Design with few industrial examples using 8086 and 68000 processors.	

CONTENTS:

TOPIC: 01 – INTRODUCTION TO 16 BIT MICROPROCESSOR:

01.01 Intel 8086 Architecture.
01.02 Intel 8088 Architecture.
01.03 Pipeline Architecture.
01.04 Bus interface unit and execution unit.

TOPIC: 02 – DATA AND ADDRESS-BUS CONFIGURATION:

02.01 Memory segmentation.
02.02 Memory address generation details.
02.03 Logical and Physical address generation.
02.04 I/O Port addresses.
02.05 Memory mapping.
02.06 Data, Code and Stack segmentation.

TOPIC: 03– ADDRESSING MODES:

03.01 Instruction set in detail and Addressing Modes.
03.02 Assembler directives.
03.03 Programming examples.

TOPIC: 04 – INTERRUPT PROCESSING:

04.01 Hardware Interrupt.
04.02 Software Interrupt.
04.03 Internal Interrupt.
04.04 Types of Interrupt.
04.05 Interrupt enabling and disabling.

TOPIC: 05 - PERIPHERAL INTERFACING CHIPS:

05.01 Intel 8255.
05.02 Intel 8253.
05.03 Intel 8259.
05.04 Intel 8251.
05.05 Interfacing of these chips with processor.
05.06 Digital interfacing.
05.07 Analog interfacing.
05.08 Industrial control applications.

TOPIC: 06 – ARCHITECTURE OF 68000 MOTOROLA PROCESSOR IN DETAIL.

06.01 Introduction.
06.02 Reference in 68000.
06.03 Memory Address.
06.04 Instruction formats.
06.05 Addressing Modes.
06.06 Instruction Sets.
06.07 STACK, Read and Write Cycle Timing.

TOPIC: 07– ORGANISATION OF INSTRUCTION SETS:

07.01 Addressing modes.
07.02 Assembly language programming.
07.03 Examples for sorting logical operations.
07.04 Control loops.
07.05 Interrupt and exception programming.

TOPIC: 08 – I/O CONTROL:

08.01 I/O control using parallel interface.
08.02 I/O control using memory mapped I/O control for data acquisition.
08.03 Data output through binary I/O lines.

Books Recommended:

1. Intel Manual of 8086 -
2. Microprocessing and Interfacing. - Hall
3. 6800 Assembly Lan. Programming. - Leventhal
4. Microprocessor - Lui & Gibson
5. Motorola Manufacturing Data Sheets. -

ADVANCED INSTRUMENTATION & MEASUREMENT

Subject Code 21605B	Theory			No of Period in one session : 60		
	No. of Periods Per Week			Full Marks	:	100
	L	T	P/S	Annual Exam.	:	80
	06	-	-	Internal Exam.	:	20

Rationale :

Objective:

S.No.	Topics	Periods
01	Sensors.	
02	Microprocessor based data acquisition.	
03	Process Control.	
04	Electronic Graphic Recording Systems.	

CONTENTS:

TOPIC: 01 – SENSORS:

01.01 Electrical sensors for :
- (a) Mechanical acquisition,
- (b) Hydraulic acquisition,
- (c) Pneumatic acquisition.

01.02 Analog sensors.

01.03 Digital sensors.

TOPIC: 02 – MICROPROCESSOR BASED DATA ACQUISITION:

02.01 Instrumentation amplifier.
02.02 Multiplexers.
02.03 Sample and hold circuit.
02.04 D/A Converter.
02.05 A/D Converter.
02.06 Data acquisition system.

TOPIC: 03– PROCESS CONTROL:

03.01 Process controller.
03.02 Hardware data logging.
03.03 Microcomputer as process controller.
03.04 Supervisory control.
03.05 Direct digital control.

TOPIC: 04 - ELECTRONIC GRAPHIC RECORDING SYSTEMS:

04.01 Introduction.
04.02 Balancing arrangement.
04.03 XY Recorder.
04.04 Types and briefs of permanent recording systems.

Books Recommended:

1. Microprocessor with Application in Control. - Ahson.
2. Microprocessor in Instruments & Control. - Bibbero
3. Modern Instrumentation System. - Mani & Others.

MINING ELECTRONIC

Subject Code 21605C	Theory			No of Period in one session : 60		
	No. of Periods Per Week			Full Marks	:	100
	L	T	P/S	Annual Exam.	:	80
	06	-	-	Internal Exam.	:	20

Rationale :

Objective:

S.No.	Topics	Periods
01	Basic Quantity Measurement.	
02	Environmental Measurement.	
03	Sensors.	
04	Detectors.	
05	Transport System Monitoring.	
06	Surveillance of Electrical System.	
07	MIS Systems.	

CONTENTS:

TOPIC: 01 – BASIC QUANTITY MEASUREMENT:

01.01 Measurement of temperature.

01.02 Measurement of pressure.

01.03 Measurement of humidity.

01.04 Measurement of Air Velocity.

TOPIC: 02 – ENVIRONMENTAL MEASUREMENT:

02.01 Introduction.

02.02 Monitoring and recording of methane.

02.03 Monitoring and recording of carbon mono-oxide.

02.04 Measuring of Oxygen and other gas quantities.

TOPIC: 03– SENSORS:

03.01 Classification of gas sensors.

03.02 Solid state sensors.

03.03 Gas analysis.

03.04 Ionisation chamber.

TOPIC: 04 - DETECTORS:

04.01 Introduction & Classification.

04.02 Early detectors of ground fires.

04.03 Smoke/fire detectors.

04.04 Detection of rock movements.

04.05 Detection of change in pressure.

TOPIC: 05 – TRANSPORT SYSTEM MONITORING:

05.01 Introduction & Classification.

05.02 Tub transport system.

05.03 Conveyer belt transport system.

05.04 NDT for wire ropes.

TOPIC: 06– SURVEILLANCE OF ELECTRICAL SYSTEM:

06.01 Introduction.

06.02 Surveillance of underground electrical systems.

06.03 Surveillance of ground electrical system.

06.04 Surveillance of communication system.

06.05 Insulation monitoring.

06.06 Fault detection in different section.

TOPIC: 07 – MIS SYSTEMS:

07.01 Introduction to control dispatch system.

07.02 Signaling in mines.

07.03 Different types of transmitters used in mines.

07.04 Different types of receiver used in mines.

07.05 Important safely signals used in mines.

MEDICAL ELECTRONICS

Subject Code 21605D	Theory			No of Period in one session : 60		
	No. of Periods Per Week			Full Marks	:	100
	L	T	P/S	Annual Exam.	:	80
	06	-	-	Internal Exam.	:	20

Rationale :

Objective:

S.No.	Topics	Periods
01	Body Skeleton.	
02	Muscle Physiology.	
03	Heart Physiology.	
04	Respiration.	
05	Neuro Physiology.	
06	Recording Techniques.	
07	Measurement & Recording of Non-Electrical Systems.	
08	Electronic Instruments affecting Human Body.	

CONTENTS:

TOPIC: 01 – BODY SKELETON:

01.01 Nerve Physiology.

01.02 Membrane Potential.

01.03 Action Potential.

01.04 Function of Nerve Junctions.

01.05 Functions of Neo-Neural Junctions.

TOPIC: 02 – MUSCLE PHYSIOLOGY:

02.01 Function of Skeleton & Smooth Muscle.

02.02 Function of Cardiac Muscle.

02.03 Cardiac Rhythmic Contraction.

TOPIC: 03– HEART PHYSIOLOGY:

03.01 Introduction to Heart function.

03.02 Blood flow.

03.03 Arterial Pressure.

03.04 E C G.

TOPIC: 04 – RESPIRATION.

TOPIC: 05 - NEURO PHYSIOLOGY:

05.01 Introduction.

05.02 Function of Spinal Cord.

05.03 Cord Reflexes.

TOPIC: 06 – RECORDING TECHNIQUES:

06.01 Introduction.

06.02 Electro-Cardiac Graph.

06.03 Electro Mypho Graph.

06.04 Electro Encyclo Graph.

TOPIC: 07– MEASUREMENT & RECORDING OF NON-ELECTRICAL SYSTEMS:

07.01 Measurement & recording of biological parameters.

07.02 Bio-Telemetry.

07.03 Safety while recording.

07.04 Patient monitoring.

07.05 Intensive care unit.

07.06 Special techniques for measurement of non-electrical parameters.

TOPIC: 08 – ELECTRONIC INSTRUMENTS AFFECTING HUMAN BODY:

08.01 Simulator.

08.02 Defibrillator.

08.03 Pace maker.

08.04 Diathermy.

08.05 Blood pumps.

08.06 Myo electric control of paralysed muscles.

Books Recommended:

1. Bio Medical Electronics - Cromwell & others.
2. Bio Electronic Instrument & Measurement - Khandpur.
3. Bio Medical Instrument & Measurement - Cromwell & others.

MICTROWAVE ENGINEERING

Subject Code 21605E	Theory			No of Period in one session : 60		
	No. of Periods Per Week			Full Marks	:	100
	L	T	P/S	Annual Exam.	:	80
	06	-	-	Internal Exam.	:	20

Rationale:

Objective:

S.No.	Topics
01	Microwave Tubes.
02	Microwave Semi Conductor Devices.
03	Microwave Components and Antennas.
04	Microwave Transmission.
05	Microwave Measurements.

CONTENTS:

TOPIC: 01 – MICROWAVE TUBES:

01.01	Introduction.
01.02	Microwave frequency band spectrum.
01.03	Klystron.
01.04	Reflex Klystron.
01.05	Travelling Wave tubes.
01.06	Magnetron.

TOPIC: 02 – MICROWAVE SEMI CONDUCTOR DEVICES:

02.01	Microwave Diodes.
02.01.01	Varactor Diodes.
02.01.02	Tunnel Diodes.
02.01.03	Gunn Diodes.
02.01.04	Avalanche effect diodes.
02.02	M A S E R.

TOPIC: 03– MICROWAVE COMPONENTS AND ANTENNAS:

03.01	Coaxial Lines.
03.02	Wave guides.
03.02.01	Rectangular.
03.02.02	Circular.
03.03	Wave guide corners and Tees.
03.04	Directional couplers.
03.05	Attenualtors.
03.06	Antennas.

03.07.01 Parabolic.

03.08.02 Horn.

03.09.03 Slot.

TOPIC: 04 – MICROWAVE TRANSMISSION:

04.01 Maxwells equations.

04.02 Modes of propagation in rectangular and circular wave guides.

04.03 Transmission through rectangular wave guide.

04.04 Cut off and guide wavelength.

04.05 Phase and group velocity.

TOPIC: 05 - DETECTORS:

05.01 Measurement of impedance.

05.02 Measurement of frequency.

05.03 Voltage standing wave ratio.

Books Recommended:

1. Microwave Communication. - Angelkos & Everhar.
2. Foundation of Microwave Communication. - Collins.
3. Microwaves. - Sanjeev Gupta & others.
4. Electromagnetic Waves & Radiating Systems - Jordan.
5. Microwave Theory & Measurement - Heylward Packard.

CADD LAB.

Subject Code 11606	Practical			No of Period in one session : 60		
	No. of Periods Per Week			Full Marks	:	50
	L	T	P/S	Annual Exam.	:	40
	-	-	3	Internal Exam.	:	10

Rationale :

Objective:

S.No.	Topics	Periods
01	Introduction.	(05)
02	Fundamental Properties.	(06)
03	Physical Parameter Modeling.	(05)
04	D. C. Analysis of Linear Network.	(06)
05	Solution of Simultaneous Equations.	(07)
06	D. C. Analysis of Non Linear Circuits.	(08)
07	Modeling of Semi Conductor Components.	(08)
08	Transient Analysis of Linear & Non Linear Circuits.	(10)
09	Circuit Modeling.	(05)
	Total :	**(60)**

CONTENTS:

TOPIC: 01 – INTRODUCTION: [05]

01.01 Device Modeling.

01.02 State of the Art of techniques.

01.03 Simulation in IC design.

TOPIC: 02 – FUNDAMENTAL PROPERTIES: [06]

02.01 Poissions Equation.

02.02 Continuity Equation.

02.03 Carrier Transport Equation.

02.04 Carrier concentration.

TOPIC: 03 – PHYSICAL PARAMETER MODELING: [05]

03.01 Carrier Mobility Modeling.

03.02 Carrier Generation & Recombination Modeling.

03.03 Thermal Generation Modeling.

TOPIC: 04 - D. C. ANALYSIS OF LINEAR NETWORK: [06]

04.01 Introduction to common techniques.

04.02 Hybrid formulation technique.

TOPIC: 05 – SOLUTION OF SIMULTANEOUS EQUATIONS: [07]

05.01 Introduction to different techniques.

05.02 Gaussian Elimination.

05.03 L U decomposition.

05.04 Exploiting scarcity of matrices.

TOPIC: 06– D. C. ANALYSIS OF NON LINEAR CIRCUITS: [08]

06.01 Introduction non-linear equation.

06.02 Newton Rapson technique for many variable.

06.03 Linearised equivalent of non-linear circuits.

06.04 Linearised equivalent of hybrid formulation.

TOPIC: 07 – MODELING OF SEMI CONDUCTOR COMPONENTS: [08]

07.01 Modeling of P N Junction.

07.02 Modeling of various diodes.

07.03 Modeling of B J T.

07.04 Modeling of F E T.

TOPIC: 08 – TRANSIENT ANALYSIS OF LINEAR & NON LINEAR CIRCUITS: [10]

08.01 Sine small signal analysis.

08.02 Linear Formulation.

08.03 Steady State Formulation.

08.04 Numerical Solution of Ordinary Differential Equation.

08.05 Associated circuit models for inductor.

08.06 Associated circuit models for capacitor.

TOPIC: 09 – CIRCUIT MODELING: [05]

09.01 Modeling of circuits having passive and active components.

Books Recommended:

1. Computer Aided Analysis of Electronic Circuits. - Chua & Lin
2. Analysis & Simulation of Semi Conductor Devices. - Siefried & Selberher
3. Computer Aided Electronic Circuit Design. - Raghuram
4. AutoCAD. - Rice
5. AutoCAD. - Oumera
6. S P I C E. - Mannual

PROFESSIONAL STUDIES & ENTREPRENEURSHIP

Subject Code 00607	Sessional			No of Period in one session : 50		
	No. of Periods Per Week			Full Marks	:	50
	L	T	P/S	Annual Exam.	:	30
	-	-	04	Internal Exam.	:	20

Rationale:

The paper has been introduced to achieve dual purpose for the students.

Firstly, this course provides the basics of Professional management and secondly it also prepares the student to undertake independent venture by becoming an entrepreneur.

This makes them conversant with their duties and responsibility to make them successful in their career building.

Objectives:

With the input provided in this paper, the students will be able to :-

- Acquire basic knowledge of management.
- Understand the area of management such as human resources, marketing, finance and commercial aspect.
- Understand the benefit of becoming an entrepreneur.
- Handle a project efficiently and in dependently.

To prepare a Project Report on any of the followings:

S.No.	Topics
01	Project Identification and formulation Report.
02	Project Profile/Pre-feasibility Report.
03	Techno-economical Feasibility Report (TEFR).
04	Market Survey Report.

CONTENTS

S.NO. TOPICS

TOPIC – 01 : PROJECT IDENTIFICATION AND FORMULATION REPORT:

- Introduction.
- Collection of Data.
- Compilation of Data.
- Analysis and Assimilation of Data.
- Product Selection.
- Report Finalisation and Report Writing.

TOPIC - 02 : PROJECT PROFILE/PRE-FEASIBILITY REPORT :

- Introduction of the product.
- Market.
- Man Power (Personnel Required).
- Manufacturing Process.
- Plant and Machinery.

- Cost of Project.
- Means of Finance.
- Cost of Production.
- Annual Turnover.
- Profit.
- Profit on Investment.

TOPIC – 03: TECHNO-ECONOMICAL FEASIBILITY REPORT (TEFR).

- Introduction on product.
- Market Prospects and Marketing.
- Location.
- Manufacturing Programme and Annual Turnover.
- Manufacturing Process.
- Cost of Project.
- Means of Finance.
- Requirement of Raw materials, Consumables, Utilities and Working Capital.
- Organisational Structure, Management and Man Power.
- Project Implementation Schedule.
- Profitability and Cash Flow.

TOPIC - 04 : MARKET SURVEY REPORT:

- Data Collection & Processing through Primary & Secondary Sources- Questionnaire method, e-mail, by post, by phone.
- Present Status.
- Growth of the Industry.
- Import and Export.
- Present market Demand.
- Forecast.
- Future Prospect/Scope.
- Market Segmentation.

Books Recommended:

1. Essential of Management, Tata McGraw Hill, Publishing Company Ltd., New Delhi. - Herald Koonz & Cyril O' Donnel.
2. Business Organisation and Management, S. C. Chand and Company (Pvt.) Ltd., Ram Nagar, New Delhi - M. C. Shukla
3. Managerial Economics, Sultan Chand & Sons, New Delhi - R. L. Vashney & K. L. Maheshwari
4. Project Appraisal and Follow up, Govind Prakashan, Mumbai. - D. P. Sharda
5. Modern Marketing Management, Progressive Corporation Pvt. Ltd., P51, Mahatma Gandhi Road, Bombay-400 001 - Dr. Rustam S. Davar

6.	A hand book for new entrepreneurs (with special reference to science and technology target group)	-	Entrepreneurship Development Institute of India, 83-A, Swastic Society Navrangpura, Ahmedabad, PIN-380 009.
7.	Student discipline	-	Published by I.S.T.E. Mysore
8.	Communication Skill	-	Published by I.S.T.E. Mysore
9.	Decision Making	-	Published by I.S.T.E. Mysore
10.	Pollution Control in Industry	-	Published by I.S.T.E. Mysore
11.	S.S.M. in Environmental Engineering	-	Published by I.S.T.E. Mysore
12.	Leadership in Organisation	-	Published by I.S.T.E. Mysore
13.	Small Enterprise Management	-	Published by I.S.T.E. Mysore
14.	Motivation	-	Published by I.S.T.E. Mysore
15.	Fundamentals of Environmental Pollution	-	Krishnan and Kannan
16.	Enviromental Engineering, T.T.T.I., Madras	-	Tata Mcgraw Hill
17.	Motivation I.I.T. Kanpur	-	Published by I.S.T.E. Mysore
18.	Mine Management	-	V.N. Singh, Bangle Prining Press Ranchi
19.	Hand book on Project Appraisal and follow up, Govind Prakashan, 204, Saraswati Kunj, 90, S. V. Road, Goregoan, Bombay-400 062.	-	D. P. Sarda
20.	Bihar Industrial Policy	-	Government of Bihar, Department of Industries.
21.	Entrepreneurship Guide	-	Bihar State Financial Corporation, Fraser Road, Patna-800 001.
22.	Management Economics, S. Chand & Sons, 4792/23, Dariaganj, New Delhi-110 002.	-	R. L. Varshney & G. L. Maheshwari
23.	Management Principles & Practices, S. Chand & Sons, 4792/23, Dariaganj, New Delhi-110002.	-	L. Prasad & S. S. Gulshan

DIGITAL ELECTRONICS & MICROPROCESSOR LAB

Subject Code 21608	Sessional			No of Period in one session : 50		
	No. of Periods Per Week			Full Marks	:	50
	L	T	P/S	Annual Exam.	:	30
	-	-	-	Internal Exam.	:	20

CONTENTS

S.No.	Topics	Periods
01	Operation of Mono stable multivibrator circuit.	
02	Operation of Bi stable multivibrator circuit.	
03	Operation of Astable multivibrator circuit.	
04	Operation of Schmitt trigger circuit.	
05	Operation of Comparator circuit.	
06	Operation of Integrator circuit.	
07	Operation of Blocking Oscillator circuit.	
08	Operation of Shift registers and counter.	
09	Operation of EPROM eraser.	
10	Operation of Multiplexers ICs.	
11	Operation of D/A converter.	
12	Operation of A/D converter.	
13	Operation of R-2R ladder network.	
14	Operation of Sample and Hold circuit.	
15	Operations of seven segments display circuit.	

PROJECT WORK AND ITS PRESENTATION IN SEMINAR

Subject Code 21609	Sessional			No of Period in one session : 50		
	No. of Periods Per Week			Full Marks	:	50
	L	T	P/S	Annual Exam.	:	30
	-	-	-	Internal Exam.	:	20

Rationale :

The Project work and its presentation in seminar is an important subject for a Diploma holder technician. The course is designed to help a students develop confidence, skill in report writing, skill to analyse, design, estimating and costing, deciding a process etc, the course will also help in developing communication skill, skill of quality documentation.

Objective:

A student will be able to:

- Identify a Problem
- Analyse the Problem
- Develop logical approach to solution of a Problem.
- Design of a product
- Make estimate of materials and processes and calculate the cost of production and decide the price of the product.
- Manufacture / assemble /fabricate the product in the workshop.
- Test the product for its quality.
- Prepare a project report (Computer printed / typed)
- Present in the form of seminar.

CONTENTS

S.No.	Topics
01	To make a bridge rectifier.
02	To make/assemble a voltage stabilizer.
03	To make/assemble stabilizer for refrigerator.
04	To make a timer circuit IC 555.
05	Electronic Regulator for Ceiling Fan.
06	To fabricate a circuit for characteristics for NPN/PNP transistors.
07	Bi-stable Multivibrator
08	Half & Full adder, substractor & Comparator.
09	8:1 Multiplexer.
10	Realising Railway Signaling System.

REPORT WRITING:

A report must include

S.No.	Topics
01	Introduction.
02	Design.
03	Estimating of materials.
04	Calculation of cost of the materials.
05	Operation time estimation.
06	Cost of Operation.
07	Process of Manufacture / Assembly / fabrication.
08	List of tools/equipments used with specification.

OR

A project on live industrial problems that may be—

- Technical
- Human Relation
- Welfare
- Safety
- Any other

The Project Report should consist of :-

01 Introduction.

02 Problem statement.

03 Background of Industry.

04 Organisational set –up.

05 Plant Lay –out.

06 Reason for selecting a problem.

07 Analysis of Problem.

08 Probable solution.

09 Best solution possible.

10 Any other.

Project work/ project report should be presented in the from of a seminar for developing confidence and communication skill among the students.

NOTE:-

Project work will be allotted to the students just in the beginning of the session. Each student will be give a separate work under the supervision of a teacher. Total number of students may be divided among the number of teachers available. The teacher concerned will select separate problem for each student under him and allot it to him at the beginning of the session. The work allotted should be completed with in scheduled time. i e. by the end of the session. Problems selected should preferably conform to the syllabus. If it is outside of the syllabus then it must be within the field of electronics engineering.