

STATE BOARD OF TECHNICAL EDUCATION, BIHAR
Scheme of Teaching and Examinations for
V SEMESTER DIPLOMA IN ELECTRONICS ENGINEERING
(Effective from Session 2016-17 Batch)

THEORY

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME	EXAMINATION – SCHEME							Credits
			Periods per Week	Hours of Exam.	Teacher's Assessment (TA) Marks (A)	Class Test(CT) Marks (B)	End Semester Exam. (ESE) Marks (C)	Total Marks (A+B+C)	Pass Marks ESE	Pass Marks in the Subject	
1.	Microprocessor & Applications	1621501	03	03	10	20	70	100	28	40	03
2.	Electronics Measurement – II	1621502	04	03	10	20	70	100	28	40	03
3.	Radio & Telecommunication System	1621503	03	03	10	20	70	100	28	40	03
4.	Power Electronics	1621504	04	03	10	20	70	100	28	40	03
5.	Television Engineering	1621505	03	03	10	20	70	100	28	40	03
		Total:- 17					350	500			

PRACTICAL

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME	EXAMINATION – SCHEME					Credits
			Periods per Week	Hours of Exam.	Practical (ESE)		Total Marks (A+B)	Pass Marks in the Subject	
					Internal (A)	External (B)			
6.	Radio & T.V. Engineering Lab.	1621506	06	04	15	35	50	20	03
7.	Digital Electronics & M.P. Lab.	1621507	06	04	15	35	50	20	03
Total:- 12							100		

TERM WORK

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME	EXAMINATION – SCHEME				Credits
			Periods per week	Marks of Internal Examiner (X)	Marks of External Examiner (Y)	Total Marks (X+Y)	Pass Marks in the Subject	
8.	Power Electronics - TW	1621508	04	15	35	50	20	01
9.	In plant training and Visit to Works - TW	1621509	4 weeks continuous	30	70	100	40	02
		Total:- 04				150		
		Total Periods per week Each of duration One Hours = 33				Total Marks = 750		24

MICROPROCESSOR & APPLICATION

Subject Code 1621501	Theory			No of Period in one session : 50			Credits 03
	No. of Periods Per Week			Full Marks	:	100	
	L	T	P/S	ESE	:	70	
	03	—	—	TA	:	10	
				CT	:	20	

Rationale :

Objective:

S.No.	Topics	Periods
01	Introduction 8085.	10
02	Microprocessor Software Concepts.	10
03	Peripheral Interfacing and Timers.	05
04	Assembly Language Programming.	05
05	A/D and D/A converters.	05
06	Introduction to Advanced Microprocessors (Intel 8086 & others)	10
07	Applications.	05
Total :		(50)

Contents : Theory			Hrs/week	Marks
Unit-1	<u>INTRODUCTION 8085:</u>		(10)	
	01.01	Architecture & Pin Diagram.		
	01.02	Chip Architecture.		
	01.03	Register Structure.		
	01.04	Memory Addressing.		
	01.05	8085 Addressing Modes.		
	01.06	8085 Instruction sets.		
	01.07	8085 Instruction timing and execution.		
	01.08	8085 Interrupt System.		
	01.09	8085 D M A.		
	01.10	8085 S I D & S O D lines.		
Unit-2	<u>MICROPROCESSOR SOFTWARE CONCEPTS:</u>		(10)	
	02.01	Instruction formats.		
	02.02	Addressing Modes.		
	02.03	Instruction Types.		
	02.04	Data Transfer Instructions.		
	02.05	Arithmetic Instructions.		
	02.06	Logical Instructions.		
	02.07	Prog. Control Instructions.		
	02.08	Input / Output Instructions.		
	02.09	Introduction to assembly language programming.		
Unit-3.	<u>PERIPHERAL INTERFACING AND TIMERS:</u>		(05)	
	03.01	Intel 8251, 8255, 8253 and 8259 chips.		
	03.02	555 Timers.		
Unit-4	<u>ASSEMBLY LANGUAGE PROGRAMMING:</u>		(05)	
Unit-5	<u>A/D AND D/A CONVERTERS:</u>		(05)	
	05.01	Successive apporox type A/D.		

	05.02	Counter type A/D.		
	05.03	Dual Slope Type A/D.		
	05.04	Sample and Hole Circuits A/D.		
Unit-6	<u>INTRODUCTION TO ADVANCED MICROPROCESSORS.</u>		(10)	
	06.01	8085, 68000, Z800- Brief discussion of each		
	06.01.01	Architecture of Intel 8086		
	06.01.02	Instruction Set.		
	06.01.03	Addressing Modes.		
	06.01.04	Advanced features.		
	06.01.05	Stacks.		
Unit-7	<u>APPLICATIONS.</u>		(05)	
	07.01	A few examples.		
Total			50	

Books Recommended:

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|-------------------------------------|------------------|
| 1. Digital Computer System | - Malvino |
| 2. Introduction to Microprocessor | - Prof. B. Ram |
| 3. Microprocessor Architecture | - Gaonkar |
| 4. Microprocessor and Microcomputer | - Lui and Gibson |

ELECTRONICS MEASUREMENT – II

Subject Code 1621502	Theory			No of Period in one session : 60			Credits
	No. of Periods Per Week			Full Marks	:	100	03
	L	T	P/S	ESE	:	70	
	04	—	—	TA	:	10	
				CT	:	20	

Rationale:

Objective:

S.No.	Topics	Periods
01	High Frequency Measurement.	(12)
02	Electronic Measurement.	(08)
03	Digital Measuring Instrument.	(10)
04	Instruments for Generation and Analysis of waves.	(06)
05	Transducers and Sensors.	(08)
06	Optical Measuring Instruments.	(06)
07	Data Acquisition System (DAS).	(10)
Total:		60

Contents : Theory			Hrs/week	Marks
Unit-1	HIGH FREQUENCY MEASUREMENT:		[12]	
	01.01	Introduction.		
	01.02	Resonance method.		
	01.03	Measurement of inductance by reactance variation method.		
	01.04	Measurement of capacitance by reactance variation method.		
	01.05	Measurement of effective resistance by variation method.		
	01.06	T Net work.		
	01.07	Parallel T network.		
	01.08	Bridge T network.		
	01.09	Q measurement.		
	01.10	Measurement of frequency.		
	01.11	Radio receiver characteristics measurement.		
	01.11.01	Sensitivity.		
	01.11.02	Selectivity.		
	01.11.03	Fidelity.		
	01.11.04	Noise figure.		
Unit-2	ELECTRONIC MEASUREMENT:		[08]	
	02.01	Electronic voltmeters (average and peak reading) VTVM.		
	02.02	Rectifier-Amplifier and amplifier-rectifier type VTVM.		
	02.03	Transistor voltmeters.		
	02.04	Differential voltmeter.		
	02.05	Small current measurement.		
Unit-3	DIGITAL MEASURING INSTRUMENT:		[10]	
	03.01	Digital Vs. analog systems.		
	03.02	Diode matrix.		
	03.03	Digital display system.		
	03.04	Digital read out system.		
	03.05	Digital frequency meter.		
	03.06	Period measurement.		
	03.07	Time interval measurement.		
	03.08	Digital voltmeter: Introduction and types.		
	03.08.01	Potentiometer etc. type.		
Unit-4	INSTRUMENTS FOR GENERATION AND ANALYSIS OF WAVES:		[06]	
	04.01	Basic oscillator circuit.		
	04.02	Pulse and square wave generator.		
	04.03	Signal/function generator.		
	04.04	Signal/function wave analyser.		
	04.05	Harmonic distortion anlyser.		
	04.06	Spectrum analyser.		

Unit-5	<u>TRANSDUCERS AND SENSORS:</u>		[08]	
	05.01	Introduction and classification.		
	05.02	Electrical phenomenon employed in transducer.		
	05.03	Linear variable differential transformer.		
	05.04	Rotary variable reluctance transducer.		
	05.05	Variable reluctance transducer.		
	05.06	Synchros resolvers.		
	05.07	Strain gauges.		
	05.08.01	Wire wound.		
	05.08.02	Pirani gauge.		
	05.08.03	Semi Conductor types.		
	05.09.	Seismic accelerometer.		
	05.10.	Thermisters.		
	05.11	Microphones (different type of introduction only)		
Unit-6	<u>OPTICAL MEASURING INSTRUMENTS:</u>		[06]	
	06.01	Black body.		
	06.02	Primary and secondary standards.		
	06.03	Measurement of lumen intensity.		
	06.04	Photo emissive cell.		
	06.05	Photo conductive cell.		
	06.06	Photo voltaic cell.		
Unit-7	<u>DATA ACQUISITION SYSTEM (DAS):</u>		[10]	
	07.01	Classification.		
	07.02	Components of analog DAS.		
	07.03	Components of digital DAS.		
	07.04	Uses of DAS.		
	07.05	Digital to analog converter.		
	07.06	Analog to digital converter.		
	07.07	Multiplexing equipment.		
		Total	60	

Books Recommended:

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| 1. Electronic Instrument and Measurement Techniques. | - Cooper. |
| 2. A Course in Elect. and Electronics Measurement | - Sawhney. |
| 3. Electrical and Electronics Measurement. | - Golding. |

RADIO & TELECOMMUNICATION SYSTEM

Subject Code 1621503	Theory			No of Period in one session : 60			Credits
	No. of Periods Per Week			Full Marks	:	100	03
	L	T	P/S	ESE	:	70	
	03	—	—	TA	:	10	
				CT	:	20	

Rationale:

Objective:

<u>S.No.</u>	<u>Topics</u>	<u>Periods</u>
01	Elements of Communications.	(08)
02	Radio Receiver.	(06)
03	Propagation of Waves.	(08)
04	Antenna.	(06)
05	Radar and Navigation Aids.	(10)
06	Satellite Communication.	(06)
07	Analog Transmission.	(06)
08	Digital Transmission.	(04)
09	Switching.	(06)
Total:		(60)

Contents : Theory			Hrs/week	Marks
Unit-1	<u>ELEMENTS OF COMMUNICATIONS:</u>		[08]	
	01.01	Principle of heterodyning.		
	01.02	Mixers.		
	01.03	Converters.		
	01.04	Radio Transmitters.		
	01.04.01	Block Diagram.		
	01.04.02	Operation and performance of AM and FM Transmitters.		
Unit-2	<u>RADIO RECEIVER:</u>		[06]	
	02.01	Block diagram of AM and FM Radio Receivers.		
	02.02	Principle of Operation.		
	02.03	Different stages i.e. R. F. Section, I F Stage, Local Oscilloator, mixer, tuning, band selection and switch, Volume Control.		
Unit-3	<u>PROPAGATION OF WAVES:</u>		[08]	
	03.01	Introduction to various modes of propagation.		
	03.02	Ground wave propagation.		
	03.03	Space wave propagation.		
	03.04	Tropospheric wave propagation.		
	03.05	Refraction by tropospheric wave.		
	03.06	Tilt of surface wave.		
	03.07	Sky wave propagation.		
	03.08	Ionospheric propagation.		
	03.08.01	Introduction.		
	03.08.02	Critical frequency.		
	03.08.03	Maximum usable frequency.		
	03.08.04	Characteristics of ionospher.		
	03.08.05	Virtual height.		
	03.08.06	SKIP distance.		
	03.08.07	Troppspheric scattering system.		
Unit-4	<u>ANTENNA:</u>		[06]	
	04.01	Introduction.		
	04.02	Radiation intensity.		
	04.03	Directivity.		
	04.04	Gain.		
	04.05	Field Pattern.		
	04.06	Phase Pattern.		
	04.07	General equation for field of a point source.		
	04.08	Introduction to working principle of- Helical, Biconical, Horn, lense, Long wire, Yagi type of Antennas.		

Unit-5	<u>RADAR AND NAVIGATION AIDS:</u>		[10]	
	05.01	Elements of RADAR System.		
	05.02	Radar Equation.		
	05.03	Radar transmitting system.		
	05.04	Radar antenna and scanning.		
	05.05	Duplexer.		
	05.06	Radar Receiver.		
	05.07	Moving Target Indicator.		
	05.08	Radar range and beckons.		
Unit-6	<u>SATELLITE COMMUNICATION:</u>		[05]	
	06.01	Introduction.		
	06.02	Need.		
	06.03	Low orbiting satellites.		
	06.04	Geo stationary satellite.		
	06.05	Choice of frequency bands.		
	06.06	Satellite broadcasting.		
	06.07	Remote sensing : basic principle.		
Unit-7	<u>ANALOG TRANSMISSION:</u>		[04]	
	07.01	DC signalling, AC signalling and Band Width, Transmission media, attenuators and repeaters, Modems.		
Unit-8	<u>DIGITAL TRANSMISSION:</u>		[04]	
	08.01	Digital Channels and PCM, Optical Fibre Transmission Systems, Integrated Services Digital Network (ISDN), ISDN Services & Applications, Broad Band Networks.		
Unit-9	<u>SWITCHING:</u>		[06]	
	09.01	Telephone Switching-Strogger : Switching Systems, Crossbar Switching, Electronic space, Division switching, Speech digitization and transmission, Time Division Switching, Optical Fibre Systems, Traffic Engg., Telephone Networks, Data Networks.		
Total-			60	

Books Recommended:

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|---|--------------------|
| 1. Electronic Communication System | - Kennedy. |
| 2. Radio Engineering | - Chatterjee. |
| 3. Telecommunications and the Computers, PHI. | - James Martin. |
| 4. Telecommunication Switching Systems & Networks, PHI. | - T. Vishwanathan. |

POWER ELECTRONICS

Subject Code 1621504	Theory			No of Period in one session :50			Credits 03
	No. of Periods Per Week			Full Marks	:	100	
	L	T	P/S	ESE	:	70	
	04	—	—	TA	:	10	
				CT	:	20	

Rationale:

Objective:

<u>S.No.</u>	<u>Topics</u>	<u>Periods</u>
01	Regulated Power Supply.	(05)
02	Large Signal Amplifier.	(08)
03	Thyristors.	(06)
04	Power Switching Devices and Triggering Circuits.	(06)
05	A C Power Control and Motor Speed Control.	(05)
06	Line Commutated Converters.	(04)
07	Inverters.	(06)
08	Choppers.	(06)
09	Speed Control of D. C. Motor.	(01)
10	Speed Control of A. C. Motor.	(03)
Total:		(50)

Contents : Theory			Hrs/week	Marks
Unit-1	<u>REGULATED POWER SUPPLY:</u>		[05]	
	01.01	Series Regulators.		
	01.02	Shunt Regulators.		
	01.03	Over load and over voltage protection.		
	01.04	Switching mode regulators.		
Unit-2	<u>LARGE SIGNAL AMPLIFIER:</u>		[08]	
	02.01	Introduction.		
	02.02	Classification.		
	02.03	Class A, B, AB and C amplifier.		
	02.04	Harmonic Distortion.		
	02.05	Transformer Coupled Amplifier.		
	02.06	Push Pull Amplifier. (Class-B)		
	02.07	Cross over distortion and its elimination.		
Unit-3	<u>THYRISTORS:</u>		[06]	
	03.01	Thyristor family, symbol and working.		
	03.02	Silicon controlled rectifier operation.		
	03.03	SCR characteristics.		
	03.04	Two transistor analogy.		
	03.05	Methods of turning on.		
	03.06	Turn off mechanism.		
	03.07	Device ratings.		
	03.08	Series and Parallel operation of SCR.		

Unit-4	<u>POWER SWITCHING DEVICES AND TRIGGERING CIRCUITS:</u>		[06]	
	04.01	Diac.		
	04.02	Triac.		
	04.03	U J T.		
	04.04	Relaxation Oscillator.		
	04.05	Use of Diac and Triac.		
	04.06	Resistance turn on circuit.		
	04.07	R C turn on circuit.		
Unit-5	<u>A C POWER CONTROL AND MOTOR SPEED CONTROL:</u>		[05]	
	05.01	Phase control.		
	05.02	Full wave control circuit.		
	05.03	Half controlled bridge circuit.		
	05.04	Dual Converters.		
Unit-6	<u>LINE COMMUTED CONVERTERS:</u>		[04]	
	06.01	Line commuted circuit.		
	06.02	Effect of source impedance.		
	06.03	Inverter operation.		
Unit-7	<u>INVERTERS:</u>		[06]	
	07.01	Forced commutation inverters.		
	07.02	Classification of forced commutation.		
	07.03	Parallel inverter.		
	07.04	Self commutated inverter.		
	07.05	Bridge inverter single and three phase.		
Unit-8	<u>CHOPPERS:</u>		[06]	
	08.01	On off control.		
	08.02	Rotor on off control chopper circuit.		
	08.03	Improved on off circuits.		
	08.04	Step up chopper circuit.		
	08.05	Multi phase circuit.		
	08.06	Two quadrant Choppers.		
	08.07	A C Choppers.		
Unit-9	<u>SPEED CONTROL OF D. C. MOTOR.</u>		[01]	
Unit-10	<u>SPEED CONTROL OF A. C. MOTOR.</u>		[03]	
Total-			50	

Books Recommended:

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|------------------------------------|-------------------------|
| 1. SCR | - Gentry and Others. |
| 2. Thyristor and Their Application | - Ramamoorthy. |
| 3. SCR | - P. C. Sen. |
| 4. SCR Mannual | - Gen. Electric Co. |
| 5. SCR | - Sugandhi and Sugandhi |

TELEVISION ENGINEERING

Subject Code 1621505	Theory			No of Period in one session : 50			Credits
	No. of Periods Per Week			Full Marks	:	100	03
	L	T	P/S	ESE	:	70	
	03	—	—	TA	:	10	
				CT	:	20	

Rationale:

Objective:

<u>S.No.</u>	<u>Topics</u>	<u>Periods</u>
01	Introduction.	(04)
02	Monochrome Picture Tube.	(08)
03	Basic T V Broadcasting.	(08)
04	T. V. Receiver.	(06)
05	Colour Television.	(08)
06	Remote Control.	(04)
07	Special Circuits	(06)
08	Receiver Servicing.	(06)
Total:		(50)

Contents : Theory			Hrs/week	Marks
Unit-1	<u>INTRODUCTION:</u>		[04]	
	01.01	Elements of T. V. System.		
	01.02	Analysis and synthesis of T. V. Picture.		
	01.03	Composite video signal.		
Unit-2	<u>MONOCHROME PICTURE TUBE:</u>		[08]	
	02.01	Camera tubes.		
	02.02.01	Image orthicon.		
	02.02.02	Vidicon.		
	02.02.03	Plumbicon.		
	02.02.04	Comparison between one another.		
Unit-3	<u>BASIC T V BROADCASTING:</u>		[08]	
	03.01	Block diagram of T. V. Transmission.		
	03.02	Principle of operation.		
	03.03	T. V. Signal propagation.		
	03.04	Antennas used for transmission.		
	03.05	Antenna used for reception.		

Unit-4	<u>T. V. RECEIVER:</u>		[06]	
	04.01	Classification.		
	04.02	Block diagram.		
	04.03	Different sections.		
	04.04	Tuners.		
Unit-5	<u>COLOUR TELEVISION:</u>		[08]	
	05.01	Compatibility.		
	05.02	Three colour theory.		
	05.03	Colour Camera.		
	05.04	Colour receiver tubes.		
	05.05	Colour T. V. Transmitter and receiver block diagram.		
	05.06	Colour signal transmission and reception.		
	05.07	PAL system details.		
Unit-6	<u>REMOTE CONTROL:</u>		[04]	
	06.01	Introduction.		
	06.02	Special Circuits.		
	06.03	Booster amplifier.		
	06.04	Automatic brightness Control.		
Unit-7	<u>SPECIAL CIRCUITS:</u>		[06]	
	08.01	Closed circuit T V.		
	08.02	Cable T. V.		
	08.03	V C P and V C R Monitors.		
Unit-8	<u>RECEIVER SERVICING:</u>		[06]	
	10.01	Troubleshooting procedures for monochrome T. V.		
	10.02	Troubleshooting procedures for colour T. V.		
	10.03	Safety precautions.		
Total-			50	

Books Recommended:

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|---------------------------|-----------------|
| 1. Television. | - R. C. Gulati. |
| 2. Monochrome Television. | - Grob. |
| 3. Colour Television. | - Grob. |
| 4. Television. | - Dhakne. |

RADIO & TELEVISION ENGINEERING LAB.

Subject Code 1621506	Practical			No of Period in one session :			Credits
	No. of Periods Per Week			Full Marks	:	50	03
	L	T	P/S	ESE	:	50	
	—	—	06	Internal	:	15	
				External	:	35	

Contents : Practical		Hrs/week	Marks
Unit-1	Study of operation of CTV.		
Unit-2	Video tape recorder circuit operation.		
Unit-3	Study of pattern generator.		
Unit-4	Familiarization with Black and White T. V. Receiver.		
Unit-5	Familiarization with Colour T. V. Receiver.		
Unit-6	Study and serving of CRT, deflection and high voltage section.		
Unit-7	Alignment of I F and frequency response curve.		
Unit-8	Study and serving of sound section.		
Unit-9	Study and serving of VHF & UHF tuner circuit.		
Unit-10	Study of Chrome section and colour sync. Circuit.		
Unit-11	Study of typical yagi antenna.		
Unit-12	Study of Remote control circuit.		
Unit-13	Study of VCR circuit.		
Unit-14	Study of video recording room.		

DIGITAL ELECTRONICS & MICROPROCESSOR LAB.

Subject Code 1621507	Practical			No of Period in one session :			Credits 03
	No. of Periods Per Week			Full Marks	:	50	
	L	T	P/S	ESE	:	50	
	—	—	06	Internal	:	15	
				External	:	35	

Contents : Practical		Hrs/week	Marks
Unit-1	Operation of Mono stable multivibrator circuit.		
Unit-2	Operation of Bi stable multivibrator circuit.		
Unit-3	Operation of Astable multivibrator circuit.		
Unit-4	Operation of Schmitt trigger circuit.		
Unit-5	Operation of Comparator circuit.		
Unit-6	Operation of Integrator circuit.		
Unit-7	Operation of Blocking Oscillator circuit.		
Unit-8	Operation of Shift registers and counters.		
Unit-9	Operation of EPROM eraser.		
Unit-10	Operation of Multiplexers ICs.		
Unit-11	Operation of D/A converter.		
Unit-12	Operation of A/D converter.		
Unit-13	Operation of R-2R ladder network.		
Unit-14	Operation of Sample and Hold circuit.		
Unit-15	Operation of Delta modulation circuit.		
Unit-16	Operation of seven segments display circuit.		

POWER ELECTRONICS LAB

Subject Code 1621508	Term Work			No of Period in one session :			Credits 01
	No. of Periods Per Week			Full Marks	:	50	
	L	T	P/S	Internal	:	15	
	—	—	04	External	:	35	

Contents : Term Work		Hrs/week	Marks
Unit-1	Series regulated power supply.		
Unit-2	Shunt regulated power supply.		
Unit-3	Characteristics of S C R.		
Unit-4	Operation of controlled rectifier.		
Unit-5	Study of parallel inverter circuit.		
Unit-6	Study of series inverter circuit.		
Unit-7	Operation of various speed control methods of induction motor.		
Unit-8	Speed control of D C motor.		
Unit-9	Speed control of synchronous motor.		
Unit-10	Operation of magnetic amplifier.		
Unit-11	Input / Output characteristics of OP AMP.		
Unit-12	Amplifier circuit operation using 723 and 309 IC.		

INPLANT TRAINING AND VISIT TO WORKS

Subject Code 1621509	Term Work			No of Period in one session :			Credits
	No. of Periods Per Week			Full Marks	:	100	02
	L	T	P/S	Internal	:	30	
	—	—	4 Weeks Continues	External	:	70	

Rationale :

A student is required to develop his knowledge skill and attitudes gained while joining through different course. It is desirable to expose the students to the world of work to be familiar with the real life situations and understand the problem there in. The “In plant training and visit to work “being introduced for the final year part time diploma technicians for Electronics Engineering with the above objective in view. This course will help the students to observe how the technical, managerial, quality control safety and other principle, are being applied in real life situation. They will be able to observe the technique of decision making on the shop floor. He will also, be able to observe the technique of decision making on the shop floor. He will, also be able to observe how his sub-ordinate perform in their day to day work and co-ordinate shop floor activities. The course will also, help bring attitudinal changes in a student.

Objective:

A student will be able to:

- Understand the working of the machines, tools and equipments more clearly.
- Write down the specifications of the machines, tools, equipments.
- Know the process of material storing / material management.
- Learn to maintain office records / filing.
- Know the process of planning, implementation and monitoring.
- Learn the skill shop floor co-ordination.
- Know the skill of office management and inventory Control.
- Understand the process of production.
- Know the skill of quality control.
- Know the organizational set-up and plant Lay-out.
- Find out Characteristics, Functions, and activities of those industries.
- Find out opportunities and method of recruitments.
- Know the source of raw materials and markets for industries.
- Find out the special characteristics of the industries.
- Observe and understand special machines, which they may not have been in their institutes.
- Observe the energy consumption in on industry method to same energy.
- Try to learn techniques to save energy.
- Observe the environment Pollutants and learn how to minimize environmental Pollutio

Student should preferably visit and undergo training in the following industries:-

	Contents : Term Work	Hrs/week	Marks
Unit-1	Microwave Tower Stations.		
Unit-2	Radio Stations.		
Unit-3	T. V. Stations.		
Unit-4	Telephone Exchange.		
Unit-5	Railway Signaling System Station.		
Unit-6	Wireless Transmission & Distribution System.		
Unit-7	Any other Industry which may be useful to the electronics Engineering technicians and are comfortably situated.		

REPORT WRITING:

A report on “In Plant Training” should include

Introduction.

Plant Lay-out and organization.

Planning for Product/Maintenance/Repair.

Shop floor training.

Testing and quality control facility.

Special observations which are special characteristics of the plant viz. material storing etc.

Conclusion-

- Observations
- Typical Characteristics
- Area of Weakness
- Suggestions

SCHEDULE FOR TRAINING:

- | | | | |
|---|--------------------------------|---|-----------|
| • | Planning/Office Management | - | One Week |
| • | Shop floor | - | Two Weeks |
| • | Testing/Quality Control/Stores | - | One Week |

The report on visit to works should be presented and assessed in the form of Seminar.