Vocational Curriculum – 2012
(With effect from the academic year 2012-2013)

Curriculum of Intermediate Vocational Course In

ELECTRONICS ENGINEERING TECHNICIAN

State Institute of Vocational Education
O/o the Commissioner of Intermediate Education,
Andhra Pradesh, Hyderabad

&

Board of Intermediate Education,
Andhra Pradesh, Hyderabad
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III. Skills to be provided
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      b) On the Job Training Sites
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I. Introduction  
Competency based curriculum on Analog and Digital Electronics and Communication Engineering had been developed for two-year Intermediate Vocational Course at the plus two stage of education. It had been designed to ensure attainment of knowledge and skills required for performing the job.

II. Objective of the Course  
To learn theory and practical knowledge in the fields of Electronics and Communication Engineering along with assembling, testing and maintenance of Analog and digital electronic equipment with computer knowledge.

III. Skills to be provided  
Assembling, Testing and Maintenance of all electronic equipment

IV. Job Opportunities  
a) Wage Employment  
1) Electronic Equipment Assemblies  
2) Electronic Equipment Tester  
3) Electronic Equipment Repairer  
4) Installation and Maintenance of Electronic Equipment  
5) Electronic Equipment Sales and Service  
b) Self Employment  
1) Servicing of Electronic Equipment  
2) Dealership/Agency for Electronic Equipment  
3) Manufacturing of Electronic Equipment
## ANNUAL SCHEME OF INSTRUCTION AND EXAMINATION FOR ELECTRONICS ENGINEERING TECHNICIAN

### 1 YEAR

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### Part-B

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Theory Instruction Months: June, July, August, September, October, January & February
On the Job Training: November & December
MARCH: IPE EXAMINATIONS
### II YEAR

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#### Part-B

| 4. Paper-II TV & Modern Communication System. | 110 | 50 | Paper –II TV Servicing Lab. | 115 | 50 | 225 | 100 |

| 6. OJT | - | - | 450 | 100 | 450 | 100 |
| Total | 630 | 250 | 795 | 250 | 1425 | 500 |

I+II+III 1000

Theory Instruction Months: June, July, November, December, January & February
On the Job Training: August, September & October
MARCH - IPE EXAMINATIONS
EVALUATION OF ON THE JOB TRAINING:

The “On the Job Training” shall carry 100 marks for each year and pass marks is 50. During on the job training the candidate shall put in a minimum of 90% of attendance.

The evaluation shall be done in the last week of January.

**Marks allotted for evaluation:**

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<td>Familiarity with tools and material</td>
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<td>Problem solving skills</td>
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<td>Comprehension and observation</td>
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<td>Ability to communicate</td>
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<tr>
<td>10</td>
<td>Maintenance of dairy</td>
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**NOTE:** The On the Job Training mentioned is tentative. The spirit of On the Job training is to be maintained. The colleges are at liberty to conduct on the job training according to their local feasibility of institutions & industries. They may conduct the entire on the job training periods of (363) I year and (450) II year either by conducting classes in morning session and send the students for OJT in afternoon session or two days in week or weekly or monthly or by any mode which is feasible for both the college and the institution. However, the total assigned periods for on the job training should be completed. The institutions are at liberty to conduct On the Job training during summer also, however there will not be any financial commitment to the department.
# SCHEME OF INSTRUCTIONS PER WEEK ELECTRONICS ENGINEERING TECHNICIAN COURSE

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| Total       | 20     | 12         | 32    |
## ELECTRONICS AND COMMUNICATION ENGINEERING TECHNICIAN

### FIRST YEAR

#### CIRCUIT THEORY & ELECTRONIC COMPONENTS

**THEORY-1**

**Periods/Week : 5**  
**Periods/Year : 180**  
**Maximum Marks: 50**

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<th>Weightage of marks</th>
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<tr>
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<td>Batteries &amp; cells</td>
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<td><strong>Total</strong></td>
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CIRCUIT THEORY & ELECTRONIC COMPONENTS
FIRST YEAR
THEORY-1

DETAILED SYLLABUS

1. RESISTORS
   1.1. TYPES OF RESISTORS, Fixed & Variable
   1.2. Fixed-carbon film, wire wound, metal film
   1.3. Color codes
   1.4. Measurement of resistance
   1.5. VARIABLE-types: potentiometers, presets
   1.6. Power rating: 1/8 watt, ¼ watt, ½ watt, 1 watt, 2 watt, Metal/carbon film resistors, wire
        wound resistors from 5 watts to few 1000 watts etc
   1.7. Resistors in series and parallel
2. INDUCTORS & TRANSFORMERS
   2.1. Electromagnetic induction
   2.2. Faraday’s laws and Lenz law
   2.3. Self inductance
   2.4. Mutual inductance concept
   2.5. Co-efficient of coupling
   2.6. Inductors in series and parallel
   2.7. Ratings and specifications
   2.8. Factors effecting the inductance
   2.9. TRANSFORMER – working principle
   2.10. Types of transformers: Step UP/DOWN, AF, RF & IF
   2.11. Types of cores used and usage
   2.12. Power transformer and other types
   2.13. Ratings and specifications
3. CAPACITORS
   3.1. Working principle
   3.2. Types of capacitors: Fixed & Variable
   3.3. Types of Dielectrics used: air, paper, mica, glass, ceramic, electrolyte and its applications
   3.4. Types polarized and non-polarized
   3.5. Color codes
   3.6. Measurement of capacitance
   3.7. Capacitors in series and parallel
   3.8. Ratings and Specifications
4. FUNDAMENTALS OF DC & AC CIRCUITS
   4.1. Electrical quantities: voltage, current, resistance, conductance, admittance, power, VA etc
   4.2. OHM’s Law
   4.3. Kirchhoff’s Voltage Law
   4.4. Kirchhoff’s Current Law
   4.5. Series & Parallel circuits-simple calculations
   4.6. Power calculations
   4.7. AC Fundamentals: Sinusoidal ac, frequency
   4.8. Instantaneous values, peak values, average values, notations used
   4.9. AC power: real power & apparent power
   4.10. AC circuits containing RL, RC & RLC in Series & Parallel
   4.11. Derive expression for Resonance(for above circuits)
5. **MISCELLANEOUS COMPONENTS**
   5.1. Wires: single core/multicore
   5.2. SWG’s, ratings & wire joints
   5.3. Connectors & types
   5.4. Terminators & types
   5.5. Making terminations using tools
   5.6. Classify switches according to poles and throws (SPST, SPDT, DPST, DPDT, Multi-pole multi-throw), symbols and ratings
   5.7. Relays: principle, types, symbols and ratings
   5.8. Contactors: principle, types, symbols and ratings
   5.9. Microphone: principle, types, symbols and ratings
   5.10. Loud speaker: principle, types, symbols and ratings
   5.11. Testing of all above components

6. **SOLDERING & PCBs**
   6.1. Soldering basics
   6.2. Soldering irons, de soldering pumps - types, soldering lead-types, ratings, fluxes
   6.3. Temperature controlled soldering/De-soldering stations
   6.4. PCB-types, single sided, double sided, multilayered
   6.5. Soldering drills
   6.6. Steps in preparation of PCB

7. **SMD COMPONENTS**
   7.1. SMD components - types
   7.2. SMD soldering stations
   7.3. Give an idea of Surface Mount Technology (SMT).
   7.4. State the advantages of SMT over pin through hole (PTH) mounting

8. **BATTERIES & CELLS**
   8.1. Primary cells and secondary cells-uses
   8.2. Types: NiCad, Alkaline, Ni-ion, Li-ion, Li-polymer - Uses
   8.3. Charging and discharging of cells
   8.4. Cells in series and parallel-effect on current/voltage
   8.5. Testing of Cells
   8.6. Ratings & specifications
   8.7. Batteries – Lead acid & maintenance free batteries
   8.8. Testing of batteries
   8.9. Ratings & specifications
## ELECTRONICS AND COMMUNICATION ENGINEERING TECHNICIAN
### FIRST YEAR
### ELECTRONIC DEVICES & CIRCUITS
### THEORY-2

**Periods/Week** : 5  
**Periods/Year** : 180  
**Maximum Marks**: 50

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<td><strong>68</strong></td>
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ELECTRONIC DEVICES & CIRCUITS
FIRST YEAR
THEORY-2

DETAILED SYLLABUS

1. SEMICONDUCTOR COMPONENTS
   1.1. State the electrical properties of solid state Semiconductor materials.
   1.2. Describe the formation of P type and N type materials
   1.3. Identify Majority and Minority carriers in P and N Type materials.
   1.4. Explain the formation of PN junction diode.
   1.5. Describe the working of PN junction Diode forward/Reverse Bias with graph
   1.6. Interpret the manufacturer specifications of a given diode from data sheet
   1.7. Know the formation of transistor & Draw the symbol of transistor.
   1.8. Explain the working of PNP and NPN Transistors with characteristics
   1.9. Define alpha, beta and gamma Factors
   1.10. Understand the specifications in DATA SHEET of transistors
   1.11. FET & MOSFET principle of working and symbols
   1.12. Advantages over BJT
   1.13. Understand the naming convention of Semiconductor components

2. POWER SUPPLIES & FILTERS
   2.1. Draw the block diagram of regulated DC power supply and explain the function of each block.
   2.2. Draw and describe the working of half wave rectifier with waveforms.
   2.3. Write the equations for RMS value, average value, ripple factor and efficiency for the half wave rectifier.
   2.4. Draw and describe the working of centre tapped full wave rectifier with waveforms.
   2.5. Draw and describe the working of bridge rectifier with waveforms.
   2.6. Derive the equations for RMS value, average value, ripple factor and efficiency for the full wave rectifier.
   2.7. Compare the above rectifier circuits.
   2.8. Explain the need for a filter in power supplies and list different types of filters.
   2.9. Explain the operation of a rectifier circuit using capacitor input, series inductor and CLC filters.
   2.10. Define voltage regulation.
   2.11. Explain the operation of simple Zener regulator

3. SMALL SIGNAL AMPLIFIERS
   3.1. Explain the need for proper biasing in amplifier circuits and List the types of biasing circuits.
   3.2. Explain the need for stabilization
   3.3. Draw the different transistor configurations & list applications
   3.4. Know cut off, saturation and active regions.
   3.5. Compare characteristics of CB, CC and CE configurations
4. **POWER AMPLIFIERS**

4.1. Explain why a voltage amplifier cannot be used as a power amplifier.

4.2. Distinguish between voltage amplifiers and power amplifiers.

4.3. Classify the amplifier circuits on the basis of frequency, period of conduction, and configurations.

4.4. Define efficiency of a power amplifier.

4.5. Draw the circuit of a class-A amplifier with resistor load at the collector and explain the operation.

4.6. Write an expression for efficiency of the above circuit.

4.7. Draw the circuit of a class-A amplifier with transformer at the collector and explain the operation.

4.8. Write an expression for efficiency of the above circuit.

4.9. List the advantages of push pull power amplifier.

4.10. Explain the operation of class-B push-pull amplifier and mention its disadvantages.

4.11. Write an expression for efficiency of the above circuit.

4.12. List the applications of power amplifiers.

4.13. List different IC numbers for power amplifiers.

5. **FEEDBACK AMPLIFIERS & OSCILLATORS**

5.1. Compare Negative and Positive feedback.

5.2. Draw the block diagram of negative feedback amplifier and explain.

5.3. List the types of negative feedback amplifiers.

5.4. State the condition for an amplifier to work as an oscillator.

5.5. Classify oscillator circuits.

5.6. Draw and Explain the working of an R.C. phase shift oscillator.

5.7. Draw and Explain the working of tuned collector oscillator.

5.8. Draw and explain the working of Hartley oscillator.

5.9. Draw and explain the working of Colpitts oscillator.

5.10. Write the expressions for frequency of above oscillators.

5.11. Explain the disadvantages of RC and LC oscillators.

5.12. List the advantages of crystal oscillators over other types.

5.13. Draw and explain the working of transistor crystal oscillator.

5.14. State the reasons for instability in oscillator circuits.

5.15. List the applications of oscillators.

6. **ANALOG IC’s**

6.1. Explain the operation of transistor series voltage regulator.

6.2. Explain the operation of transistor shunt voltage regulator.

6.3. List the types of IC regulators and give the advantage of IC regulators.

6.4. Explain the operation of fixed positive and negative voltage regulators.( using 7800 series and 7900 series)

6.5. Explain the operation of adjustable voltage regulator (LM317).

6.6. Draw and explain the differential amplifier.

6.7. State the function of an operational amplifier.

6.8. Know the operational amplifier characteristics like Input impedance, Open loop gain, Slew rate, CMRR, Input offset voltage, Input offset Current.

6.9. List the specifications of ideal operational amplifier.

6.10. Draw the block diagram and pin out diagram of IC 741 and explain each block and pin.

6.11. Illustrate the use of operational amplifier as summer, integrator, differentiator, inverter and multiplier, voltage follower, voltage to current converter, current to voltage converter, comparator, square wave generator.

6.12. Draw the block diagram of 555 IC and explain.

6.13. Explain the working of As table multivibrator using 555 IC.

6.14. State PLL

6.15. Draw and explain the block diagram of PLL – LM565.

6.16. Explain the operation VCO (LM566).
6.17. Define lock range of PLL
6.18. Define capture range of PLL.
6.19. List the applications of PLL.
6.20. Explain frequency multiplier and FM demodulator using PLL.

7. POWER ELECTRONIC DEVICES
7.1. List different thyristor family devices.
7.2. Sketch the ISI circuit symbols for each device.
7.3. Describe constructional details of SCR.
7.4. Draw & Explain the Volt – Ampere characteristics of SCR.
7.5. Mention the ratings of SCR.
7.6. Give constructional details of DIAC & TRIAC
7.7. Draw & Explain the Volt-ampere characteristics of Diac & Triac under forward / reverse bias.
7.8. State the different modes of Triac triggering.
7.9. Draw & Explain SCR circuit triggered by UJT.
7.10. Explain power control circuits Diac, Triac & SCR’s.
7.11. Briefly explain the working of Reverse conducting thyristor (RCT), Asymmetrical SCR (ASCR), Power BJT, Insulated gate bipolar transistor (IGBT), MOS-controlled thyristors (MCT) with characteristics.
7.13. List the applications of all power electronic devices
7.14. POWER CONTROL SCHEMATIC

8. OPTO ELECTRONIC DEVICES
8.1. Classify optoelectronic devices
8.2. Explain the operation of LDR
8.3. Explain the construction, working principle and characteristics of LED
8.4. Understand the generation of different colour LEDs, their forward voltages, and specifications.
8.5. Explain the construction and working principle of LCD.
8.6. Explain the applications of LED and LCD in discrete displays, dot-matrix and seven segment displays.
8.7. Explain the construction, operation and characteristics of photo diode.
8.8. Explain the construction, operation and characteristics of photo transistor.
8.9. List the applications of photo diode and photo transistor
8.10. Give an idea of opto-coupler
8.11. Explain the principle and working of photo conductive cells (LDR)
### ELECTRONICS AND COMMUNICATION ENGINEERING TECHNICIAN
### FIRST YEAR
### DIGITAL ELECTRONICS AND COMPUTER FUNDAMENTALS
### THEORY-3

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DIGITAL ELECTRONICS AND COMPUTER FUNDAMENTALS
FIRST YEAR
THEORY-3

DETAILED SYLLABUS

1. NUMBER SYSTEMS
   1.1. Explain Binary, Octal, Hexadecimal number systems and compare with decimal system.
   1.2. Convert a given decimal number into Binary, Octal, and Hexadecimal numbers and vice versa.
   1.3. Convert a given binary number into octal and hexadecimal number system and vice versa.
   1.4. Perform binary Addition, Subtraction, Multiplication and Division.
   1.5. Write 1’s complement and 2’s complement numbers for a given binary number.
   1.6. Perform subtraction of binary numbers in 2’s complement method.
   1.7. Explain the use of alphanumeric codes (ASCII & EBCDIC)
   1.8. State different postulates in Boolean algebra.

2. LOGIC GATES & DIGITAL IC FAMILIES
   2.1. Explain AND, OR, NOT gates with truth table.
   2.2. Explain the working of universal logic gates (NAND, NOR gates) using truth tables.
   2.3. Explain the working of an exclusive – OR gate with truth table.
   2.4. State and explain De-Morgan’s theorems.
   2.5. Develop AND, OR, NOT operations using NAND, NOR gates.
   2.6. List different digital logic families.
   2.7. Explain the characteristics of digital ICs such as logic levels, propagation delay, Noise margin, Fan-in, Fan-out, and Power dissipation.
   2.8. Compare the TTL, CMOS and ECL logic families.
   2.9. List the numbers of Digital IC Logic gates and understand the specifications

3. COMBINATIONAL CIRCUITS
   3.1. Give the idea of combinational logic circuits.
   3.2. Draw Half adder circuit using Exclusive OR gate and AND gate and explain its function using truth table.
   3.3. Realise a Half-adder using NAND gates only and NOR gates only.
   3.4. Draw the full adder circuit and explain its operation with truth table.
   3.5. Show that two Half-adders and an OR – gate constitutes a full-adder.
   3.6. Draw and explain a 4 Bit parallel adder using full – adders.
   3.7. Draw and explain the operation 4 X 1 Multiplexer
   3.8. Draw and explain the operation 1 to 4 demultiplexer.
   3.9. Draw and explain 3 X 8 decoder.
   3.10. List the applications of multiplexers and decoders.
   3.11. List some of the popular digital ICs and appreciate the applications

4. SEQUENTIAL CIRCUITS
   4.1. Give the idea of Sequential logic circuits.
   4.2. Explain NAND and NOR latches with truth tables
   4.3. State the necessity of clock and give the concept of level triggering and edge triggering.
   4.4. Draw and explain clocked SR flip flop using NAND gates.
   4.5. Study the need for preset and clear inputs.
   4.6. Construct level clocked JK flip flop using S-R flip-flop and explain with truth table
   4.7. Explain the level clocked D and T flip flops with the help of truth table and circuit diagram.
   4.8. Give only the truth tables of edge triggered D and T flip flops with their symbols.
   4.9. List the applications of flip flops.
   4.10. State the need for a Register and list the types of registers.
   4.11. Draw and explain working of 4 bit shift left and shift right registers(7475)
   4.12. Draw and explain parallel in parallel out shift register
   4.13. Explain the working of Universal shift register (74194 )
   4.15. Distinguish between synchronous and asynchronous counters.
4.16. List applications of counters.
4.17. List the IC numbers of flip flops, registers and counters.

5. D/A & A/D CONVERTORS
5.1. State the need for A/D and D/A converters.
5.2. Explain the terms resolution, Accuracy, Monotonicity and settling time of D/A converter.
5.3. Explain D/A conversion using binary weighted resistors.
5.4. Explain D/A conversion using R-2R ladder network.
5.5. Explain A/D conversion using counter method.

6. SEMICONDUCTOR MEMORIES
6.1. State memory read operation, writes operation, access time, memory capacity, address lines and word length.
6.2. Classify various types of memories.
6.3. Differentiate between ROM and RAM
6.4. Explain basic principle of working of diode ROM
6.5. Distinguish between EEPROM and UVROM.
6.6. List different ROM and RAM ICs
6.7. Explain the working of basic dynamic MOS RAM cell.
6.8. Compare static RAM and dynamic RAM
6.9. Explain the working principle of NVRAM
6.10. State difference between Flash ROM and NVRAM
6.11. Give an idea of memory modules used in computers

7. COMPUTER HARDWARE & NETWORKING BASICS
7.1. Study the layout of components in the motherboard.
7.2. List different expansion slots available on the motherboard.
7.3. Describe the functions of chip set & know chipset numbers in use.
7.4. Know the specifications of processor.
7.5. Know different types of RAMs in use.
7.6. Know about cache memory.
7.7. Know about accelerated graphics port/card.
7.8. Study about power supply connectors and external devices.
7.9. Know about Serial, parallel and USB ports(basics).
7.10. Know the connector details for printer, serial port, mouse, keyboard and USB.
7.11. Know different voltages in SMPS and connector details.
7.13. Describe the functioning of Network card and list its specifications.
7.14. Understand BIOS, Operating system, application software
7.15. Appreciate the need for networking of computers
7.16. Explain the concepts of router and routing
7.17. Categorise the computer networks
7.18. Explain the working of LAN
7.19. Understand Bluetooth technology
7.20. Write the role of DNS server.
7.21. Explain how email is transferred.
7.22. Explain file transfer operation (FTP) in web applications
7.23. Explain the working of Web server.
7.24. Explain the working of Web browser.
7.25. Discuss about hyperlinks.
7.26. Know the concept of remote login

8. MICROSOFT OFFICE
8.1. Word: Basics of creating a document, editing and formatting
8.2. Excel: Basics of creating a excel sheet, editing and formatting
8.3. Power point: Basics of creating a power point presentation, editing and formatting
1. Measurement of Resistance, Capacitance and inductance by E and I method and verification of Resistance by Colour code
2. Resistors in Series and Parallel Circuits
3. Measurement of Coefficient of coupling of an iron core transformer
4. Series Resonance Circuit and determination of its resonant frequency, bandwidth
5. Parallel resonance circuit, determination of its resonant frequency, bandwidth
6. PN Diode Characteristics - Forward and Reverse characteristics
7. Zener Diode characteristics
8. Transistor characteristics - CE and CB
9. FET Characteristics
10. SCR Characteristics
11. Zener Voltage regulators and measurement of percentage of regulation
12. RC coupled Amplifier : obtain the frequency response and calculate the gain
13. Study of Push pull power Amplifier
14. Half wave Rectifier, Full wave Rectifier with and without filter, calculate the ripple factor and percentage of regulation
15. Measurement of frequency of Hartley and Colpitts oscillators
16. Measurement of frequency of Tuned Collector and Crystal Oscillators
17. Study of different IC packages and pin identification
18. Study of different types of batteries
19. Photo diode characteristics
20. Know the various cut-in voltages of different LEDs (All colors)
ELECTRONICS AND COMMUNICATION ENGINEERING TECHNICIAN
FIRST YEAR
DIGITAL ELECTRONICS AND COMPUTER FUNDAMENTALS LAB
PRACTICALS-2

Periods/Week : 5
Periods/Year : 180
Maximum Marks: 50

1. Logic gates - I - AND, OR, NOT (Using IC’s)
2. Logic gates - II - NAND, NOR, EX-OR (Using IC’s)
3. Half Adders - Subtractor (Using IC Logic gates)
4. Full adder - Subtractor (Using IC Logic gates)
5. Verification of truth tables of RS, RST, D, T
6. To study details of counters IC’s like 7490
7. To study shift register IC’s like 7495
8. Observe the output of decade counter 7490 On a seven segment display using a decoder
9. A/D, D/A Converter
10. Identify the various peripherals
11. Know how to open an application program
12. Know how to create a folder in a specified location
13. Open MS-word and Identify the components on the screen
14. Create a document using MS-word and save it
15. Familiarise with spell checker facility of MS-Word
16. Open MS-Excel and identify the components on the screen
17. Create a Worksheet in MS-Excel and save it
18. Sort and filter data in a worksheet
19. Create a simple Power point presentation for a small unit
20. Backup required files and folders to a CD-ROM
# ELECTRONICS AND COMMUNICATION ENGINEERING TECHNICIAN
## FIRST YEAR
### ENGINEERING DRAWING
#### PRACTICALS-3

**Periods/Week:** 5  
**Periods/Year:** 180  
**Maximum Marks:** 50

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COMMUNICATION ENGINEERING
SECOND YEAR
THEORY-1

DETAILED SYLLABUS

1. MODULATION
   1.1. Basic elements of a communication system.
   1.2. Block diagram of communication system.
   1.3. Need for modulation in communication systems.
   1.4. Distinguish between base band, carrier, and modulated signals with waveforms.
   1.5. Explain the relationship between channel bandwidth, base band bandwidth and transmission time
   1.6. Define the modulation index of AM signal
   1.8. Significance of bandwidth in a communication system.
   1.9. Introduction to Angle modulation.
   1.10. Explain the types of Angle modulation.
   1.11. Explain the differences between Amplitude and Angle modulation techniques.
   1.12. Write the time-domain equation for an FM signal.
   1.13. Calculate bandwidth, sideband frequencies of FM signal.
   1.15. Explain the merits and demerits of FM over AM

2. TRANSMITTERS & BASICS OF DIGITAL COMMUNICATION
   2.1. Introduction to transmitters and receivers.
   2.2. List specifications of transmitters.
   2.3. Distinguish between high level and low level modulation.
   2.4. Draw the block diagram of a Low level AM transmitter.
   2.5. Draw the block diagram of a High level AM transmitter.
   2.6. DIGITAL COMMUNICATION CONCEPT
   2.7. Compare analog and digital communication techniques.
   2.8. Describe pulse-code modulation
   2.9. Describe delta modulation.
   2.10. Describe the basic types of digital modulation.
   2.11. State the need for digital modulation.
   2.12. Briefly explain ASK, FSK and PSK.

3. TRANSMISSION LINES, WAVE PROPAGATION & ANTENNAS
   3.1. Introduction to transmission lines and different types.
   3.2. Know the losses in transmission lines.
   3.3. Explain the importance of impedance matching with respect to transmission lines.
   3.4. Describe the nature and behaviour of radio waves.
   3.5. Describe reflection, refraction and diffraction of EM waves.
   3.6. Describe the ground wave propagation of EM waves.
   3.7. Describe the space wave propagation of EM waves.
   3.8. Describe the sky wave propagation of EM waves.
   3.9. Know about the impedance of free space.
   3.10. Introduction to antenna systems.
   3.11. Sketch the radiation pattern of isotropic and half wave dipoles.
   3.13. Define antenna gain, directivity, beam width, and front to back ratio.
   3.14. Explain the basic principles of operation of antenna systems.
   3.15. Explain the concept of grounding.
   3.16. Describe the principle of Marconi (monopole) antenna.
   3.17. Describe the operation and applications of folded dipole.
   3.18. Describe the operation and applications of loop, helical antennas.
3.19. Explain radiation pattern and applications of Yagi antenna.
3.20. Explain the principle of parabolic reflector.
3.21. Explain the operation of Dish antenna system.

4. RADIO RECEIVERS
4.1. Basic functions of a Radio receiver.
4.2. Define sensitivity, selectivity, fidelity of a receiver.
4.3. Compare AM and FM receivers.
4.4. Explain the process of super heterodyning in radio receiver.
4.5. Draw block diagram of super heterodyne receiver and explain its operation.
4.6. Explain the need for AVC (AGC).
4.7. Explain the process of demodulation in FM receivers (Foster-Seely).
4.8. Draw the block diagram of TRF receiver and explain its working.
4.9. List various ICs used receivers with internal block diagrams.
4.10. List common faults and servicing techniques.

5. PUBLIC ADDRESS SYSTEM
5.1. Define speech, music and noise.
5.2. Know the nature of sound, reflection, refraction, diffraction and absorption.
5.3. Know the concept of Hi-Fi and Stereo.
5.4. Know the need of bass, treble, balance, and volume control in stereo amplifier.
5.5. Explain a simple circuit showing the above controls.
5.6. Briefly describe disc recording of audio signal with block diagram.
5.7. Briefly describe reproduction of audio signal recorded on disc with block diagram.
5.8. Briefly explain the principle of magnetic recording and reproduction.
5.9. List the advantages and disadvantages magnetic recording.

6. MODERN DISC RECORDERS/PLAYERS
6.1. List the types of optical recording.
6.2. Explain the method optical recording of sound on film.
6.3. Explain the method optical recording of sound on Compact Disc.
6.4. List the advantages and disadvantages of CDs.
6.5. Explain optical pick-up system.
6.6. Explain working of compact disc player with block diagram.
6.7. Know the MP3 format and differentiate this with audio CD.
6.8. Differentiate CD and DVD.
6.9. Explain the working principle of DVD player.
6.10. Explain the concept of noise reduction using DOLBY system.
6.11. Arrange the Public Address system and test the performance.
6.12. Know the block diagram and understand with a typical schematic diagram.
### ELECTRONICS AND COMMUNICATION ENGINEERING TECHNICIAN SECOND YEAR
### TV & MODERN COMMUNICATION SYSTEM THEORY-2

**Periods/Week : 5**  
**Periods/Year: 130**  
**Maximum Marks: 50**

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TV & MODERN COMMUNICATION EQUIPMENT
SECOND YEAR
THEORY-2

DETAILED SYLLABUS

1. TV Transmitter
   1.1. Introduction to the TV transmitters
   1.2. Draw the block diagram of basic TV system and explain the function of each block.
   1.3. Explain formation of picture.
   1.4. State the need for horizontal and vertical scanning.
   1.5. CCIR - B standards and specifications for Monochrome TV.
   1.6. Explain the interlaced scanning.
   1.7. Sketch the composite video signal as per ISI specification.
   1.8. State the need for vertical synchronization, horizontal synchronization, blanking pulses, front porch, back porch and equalizing pulses.
   1.9. Name the different types of camera tubes.
   1.10. Describe the construction and working of Image Orthicon tube.

2. TV RECEIVER
   2.1. Draw the block diagram of a T.V. receiver and state the function of each block.
   2.2. Sketch the types of signals at various input and output stages in the block diagram.
   2.3. Introduction to Colour Television System.
   2.4. Explain the main characteristic of human eye with regard to perception of colours.
   2.5. Distinguish between additive and subtractive mixing of colours.
   2.6. Explain complementary colours, hue, saturation, and Colour circle.
   2.7. Explain compatibility and reverse compatibility in TV system.
   2.8. Mention the different standards of Colour transmission system like NTSC, PAL and SECAM.
   2.9. Draw the block diagram of a Colour TV receiver and state the function of each block.
   2.10. State the different Colour receiver- operating & servicing controls.
   2.11. Describe constructional features of Colour picture tubes.

3. LCD/LED TVs
   3.1. Understand the principle of LCD/LED monitor
   3.2. Understand block diagram of LCD/LED TVs
   3.3. List various ICs USED in the above with a typical schematic circuit
   3.4. List advantages of LCD/LED TV technology
   3.5. Discuss common faults in all the above with servicing procedures to rectify

4. CABLE TV/DTH SYSTEM
   4.1. Draw and explain the block diagram of CATV.
   4.2. Explain the cable TV components such as amplifiers directional couplers and converters.
   4.3. Explain the necessity of midband and super band channels
   4.4. State the need for satellite for TV broadcasting over wide area.
   4.5. Explain the DTH reception with block diagram.
   4.6. List the deficiencies in the existing TV system.
   4.7. Explain how the existing TV system can be improved in HDTV system.

5. OPTICAL FIBRE COMMUNICATION FUNDAMENTALS
   5.1. Basic Introduction to Fibre Optic communication.
   5.2. Explain total internal reflection phenomena used in optical fibres.
   5.3. Define numerical aperture, modes, dispersion.
   5.4. List various losses with reference to optical fibre.
   5.5. Explain the advantages of optical fibres in communication.
   5.6. Explain types of fibre optic cables.
   5.7. Mention different splices and connecters, optical couplers, switches and relays.
5.8. Explain the operation of LED used in optical fibre communication
5.9. Explain the operation of Laser diodes used in optical fibre communication.
5.10. Explain the operation of PIN diode used as detector in optical fibre Communication
5.11. Explain the operation of APD used as detector in optical fibre Communication

6. FIBRE COMMUNICATION SYSTEMS
6.1. Explain basic fibre optic communication system with block diagram.
6.2. Explain repeaters and optical amplifiers.
6.3. Define wavelength division multiplexing.
6.4. Explain the principle of DWDM.
6.5. Discuss use of optical fibre in local area network.
6.6. Discuss Ethernet on fibre and gigabit Ethernet.
6.7. Mention the applications of optical fibres.
6.8. Discuss the applications of optical fibres in local telephone and cable TV applications
6.9. Know the various tools used and methods for measurement of parameters on OFCs
6.10. OTDR applications in servicing
**ELECTRONICS AND COMMUNICATION ENGINEERING TECHNICIAN**  
**SECOND YEAR**  
**MEASURING INSTRUMENTS, CONSUMER & POWER ELECTRONICS**  
**THEORY-3**

Periods/Week : 5  
Periods/Year : 130  
Maximum Marks: 50

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MEASURING INSTRUMENTS, CONSUMER & POWER ELECTRONICS  
SECOND YEAR  
THEORY-3

DETAILED SYLLABUS

1. MEASURING & TESTING OF COMPONENTS V Transmitter  
   1.1. Measurement of AC/DC Voltages and currents using voltmeters and current meters  
   1.2. Study and use of various regulated power supply units  
   1.3. Measurement of voltages, currents and resistance using analogue and digital Multimeters and continuity test.  
   1.4. Test and measure the values of capacitor using R.L.C meter and compare with the marked/color code value  
   1.5. Test the given Transformer and measure Primary and secondary DC resistance and Voltages by using Multimeter  
   1.6. Test the given Loud speaker and measure the Voice coil resistance –using Multimeter  
   1.7. Test the working of different types of switches, Relays, Connectors and Cables

2. CRO AND FREQUENCY GENERATORS  
   2.1. Study and Use CRO(single trace and Dual Trace) for measuring frequency and amplitude (CRT type)  
   2.2. Study and use of A.F/R.F signal generators  
   2.3. Study and use DSO for measuring frequency, Amplitude, Phase, Modulation Index of A.M  
   2.4. Identify leads and testing of different diodes and transistors.  
   2.5. Study of data manuals/application manuals for diodes and transistors

3. UPS AND INVERTERS  
   3.1. Compare online UPS and OFF line UPS  
   3.2. Classify inverters  
   3.3. Explain the working of single-phase bridge inverter using MOSFET  
   3.4. Explain the working of voltage source inverter  
   3.5. State the need for uninterrupted power supply(UPS)  
   3.6. Explain the working of three-phase inverter  
   3.7. List different types of UPS  
   3.8. Draw and explain the block diagram of off-line UPS  
   3.9. Draw and explain the block diagram of on-line UPS  
   3.10. Understand a typical schematic of each and  
   3.11. Discuss ICs used and servicing procedures

4. TELEPHONE AND CELLULAR COMMUNICATION  
   4.1. Understand a basic telephone system  
   4.2. Explain the operation of basic telephone equipment  
   4.3. Understand the working of digital dialing instrument(push button type)  
   4.4. Understand a simple intercom system  
   4.5. Basic concepts of Mobile Communication system  
   4.6. Intelligent network concept  
   4.7. Explain cellular concept  
   4.8. Describe cellular system operation  
   4.9. Significance of frequency re-use and hand off features.  
   4.11. Know GSM standards and service aspects  
   4.12. List the radio characteristics of GSM  
   4.13. Basic concepts of CDMA systems used in mobile communication.
ELECTRONICS AND COMMUNICATION ENGINEERING TECHNICIAN
SECOND YEAR
COMMUNICATION ENGINEERING LAB
PRACTICALS -1

Periods/Week : 5
Periods/Year : 130

Maximum Marks: 50

1. Study of Servicing tools and instruments (Soldering Iron, Screw Driver Set, Tweezers, Nose Plier, Cutter, Hammer, File, Desolder pump, Squeezers)
2. Electronic Lab safety precautions (Regarding wiring, Flooring, First Aid Treatment)
3. Soldering Practice on PCB and wiring practice
4. Familiarization and Testing of Electronic Components like resistor, capacitor, inductor, transformer, loud speaker, switches, relays, connectors, fuses and cables and semiconductor devices like diode, transistor, IC packages
5. Study of power supply stage in Radio Receiver (Full wave Bridge Rectifier with Filter)
6. Study of output stage, voltage measurement
7. Study of Detector and AF Voltage Amplifier, Voltage measurement
8. Study of IF Amplifier Stage and Voltage measurement.
9. Study of RF Amplifier, Mixer, Local oscillator stage and voltage measurement
10. Study of FM receiver
11. Study of IC version 2-band Radio AM/FM Radio receiver
12. Study of Multiband Radio receiver
13. Mention typical faults in a Radio receiver and observe the effect on voltage data and performance of the Radio Receiver
14. Study of PA system and measurement of standard voltages at various points
15. Rectifying the faults in PA system
16. Study of Tape Recorder, Two-in-one and Audio CD player
17. Rectify the faults in the Tape Recorder, Two-in-one
18. Rectify the faults in Audio CD player
19. Rectify the faults in DVD player
20. Familiarization of SMD handling tools used for soldering/Desoldering
ELECTRONICS AND COMMUNICATION ENGINEERING TECHNICIAN
SECOND YEAR
TV SERVICING LAB
PRACTICALS -2

Periods/Week : 5
Periods/Year : 130       Maximum Marks : 50

1. Study of pattern generator and its use
2. Study of wobblescope and its use for alignment of T.V. receiver
3. Study of operating controls and servicing controls of B/W T.V and typical voltages
4. Tracing of different stages in B/W T.V. Receiver
5. Familiarization of different stages with Transistors, IC's used in B/W T.V., typical voltages
6. Tracing of different stages of Colour T.V. receiver
7. Familiarization of different stages with transistors, IC's used in Colour T.V. and Typical Voltages.
8. Measurement of picture tube voltages of B/W, Colour T.V. and picture adjustments
9. Assemble and erection of T.V. antenna
10. Front panel controls and adjustments
11. T.V. picture, sound adjustments by using pattern generator
12. Study the faults in various stages of B/W T.V. and rectification
13. Rectify the given faults in various stages of colour T.V.
14. Study of SMPS and measurement of the output voltages
15. Identify the stages of SMPS, and mention the faults in SMPS and rectification of the faults
16. Study of different types of Tuners
17. Study of LCD TV
18. Familiarization of different voltages in LCD TV
19. Familiarization of different voltages in LED TV
20. Connection and Tuning of Cable TV
ELECTRONICS AND COMMUNICATION ENGINEERING TECHNICIAN
SECOND YEAR
MEASURING INSTRUMENTS AND SERVICING LAB
PRACTICALS -3

Periods/Week : 5
Periods/Year: 130
Maximum Marks : 50

1. Conversion of Ammeter into Voltmeter.
2. Study and use of Analog Multimeter
3. Study and use of Digital Multimeter
4. Study and use of Audio Frequency Oscillator
5. Study and use of AMSSG
6. Study and use of Digital R-L-C meter
7. Measurement of DC and AC Voltage using CRO
8. Measurement of Frequency and phase using CRO.
9. Measurement of Modulation Index using CRO
10. Study and use of pattern generator
11. Study of Battery Eliminator and measurement of standard voltages at various points.
12. Rectify the faults in the Battery Eliminator
13. Study of Electronic Stabilizer and measurement of standard voltages at various points.
15. Study of Emergency Light and measurement of standard Voltages at various
16. Rectify the faults in the TV remote control.
17. Identify the different stages of TV remote control Transmitter and receiver.
18. Identify the different faults in cardless telephone and cell phone.
### VII. List of Equipment

**ELECTRONICS AND COMMUNICATION ENGINEERING TECHNICIAN**

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of the equipment specifications</th>
<th>Quantity</th>
<th>Amount Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Regulated power supply 30V/1A</td>
<td>10</td>
<td>50,000</td>
</tr>
<tr>
<td>2.</td>
<td>Digital multimeters</td>
<td>05</td>
<td>15,000</td>
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<tr>
<td>3.</td>
<td>Analog multimeters (Motwane)</td>
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<tr>
<td>4.</td>
<td>Audio signal generator</td>
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<tr>
<td>5.</td>
<td>Oscilloscopes 20 MHZ</td>
<td>04</td>
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<tr>
<td>6.</td>
<td>RF Voltmeters</td>
<td>05</td>
<td>20,000</td>
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<tr>
<td>7.</td>
<td>AM/FM Signal Generators</td>
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<td>7,000</td>
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<tr>
<td>8.</td>
<td>Dynamic Radio Demonstration Unit</td>
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<tr>
<td></td>
<td>Single band Medium wave</td>
<td>02</td>
<td>8,000</td>
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<tr>
<td></td>
<td>Two bands</td>
<td>02</td>
<td>800</td>
</tr>
<tr>
<td></td>
<td>Multiple band</td>
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<tr>
<td>9.</td>
<td>Dynamic T.V. Demonstration Model</td>
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<td></td>
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<tr>
<td></td>
<td>B/W-21'</td>
<td>01</td>
<td>4,000</td>
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<tr>
<td></td>
<td>Colour-21'</td>
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<td>12,000</td>
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<td>10.</td>
<td>T.V. Pattern generator (monochrome)</td>
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<tr>
<td>11.</td>
<td>Decade Resistance box</td>
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<td>12.</td>
<td>Decade Inductance box</td>
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<td>15,000</td>
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<tr>
<td>13.</td>
<td>Decade capacitance box</td>
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<td>15,000</td>
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<td>14.</td>
<td>Panel meters</td>
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<td></td>
<td>a) Voltmeters</td>
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<td>O-10V</td>
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<td>O-50V</td>
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<td>O-100V</td>
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<td></td>
<td>b) Ammeters</td>
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<td>0-100MA</td>
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<td>0-1MA</td>
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<td>0-100MA</td>
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<td>0-500MA</td>
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<td>15.</td>
<td>Tape recorders</td>
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<td>16.</td>
<td>Two-in-one</td>
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<td>17.</td>
<td>Woubloscope</td>
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<td>18.</td>
<td>Public Address Amplifiers 100W</td>
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<td>19.</td>
<td>Column loud speakers</td>
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<td>20.</td>
<td>DVD Player</td>
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<td>CD Player</td>
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<td>22.</td>
<td>Audio tapes</td>
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<td>23.</td>
<td>CD Video &amp; Audio</td>
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<td>24.</td>
<td>Speakers</td>
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<td>25.</td>
<td>Experimental Boards</td>
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<td>1. Transistor CB,CE amplifiers</td>
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<td></td>
<td>2. Oscillators Hartley, colpits,</td>
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<td>tuned voltage each two</td>
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<td>3. SCR Characteristics</td>
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<td>4. FET Amplifier</td>
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<td>5. UJT characteristics</td>
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<td>6. Zenor diode characteristics</td>
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<td>7. Zenor diode voltage regulators</td>
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<td>8. AM generator</td>
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<td>9. FM generator</td>
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<td>10. Tuned RF amplifier</td>
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<td>3,000</td>
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<td>11. Class A, RC coupled power amplifier</td>
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<td>12. Class-B, push-pull power Amplifier each two</td>
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<td>13. Crystal control oscillator</td>
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<td>26. Digital frequency counters</td>
<td>10</td>
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<td>27. Rheostats 5 Amperes</td>
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<td>28. Digital LCR meters</td>
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<td>29. Colour T.V.-21'</td>
<td>2</td>
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<td>30. Colour T.V.14'</td>
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<td>31. Balun &amp; other accessories</td>
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<td>32. Tool kit boxes</td>
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<tr>
<td>33. Soldering iron with stands</td>
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<tr>
<td>34. Desoldering pump</td>
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<tr>
<td>35. Bread Boards</td>
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<tr>
<td>36. Insulation tester</td>
<td>3</td>
<td>6,000</td>
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<tr>
<td>37. Battery eliminators</td>
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<td>600</td>
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<tr>
<td>38. Emergency light</td>
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<tr>
<td>39. Inverters 100VA, 500VA each two</td>
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<tr>
<td>40. Electronic stabilizer</td>
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<td>1,000</td>
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<tr>
<td>41. Digital trainers</td>
<td>6</td>
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<tr>
<td>42. Computers</td>
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<tr>
<td>43. Digital IC Tester</td>
<td>4</td>
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</tbody>
</table>

**Total** 9,36,900

Total Cost of the lab is nine lakhs thirty six thousands nine hundred only.
VIII. a) Collaboration Institutions for Curriculum Transaction State Board of Technical Education and Training Andhra Pradesh

b) On Job Training Centers
   Electronic Industries locally available/service centers

IX. Vertical Mobility
   a) With Bridge Course
      1. Admission into IInd year DECE
      2. Admission into B.Sc in any University
      3. Eligible to EAMCET
   b). Without Bridge Course
      Admission into B.A/B.Com

X. Reference Books

1. Electronic Components - D.V.Prasad
2. Electronic Components - Padmanabham
3. Circuit Theory - Schaum Series
5. Electronic Devices and Circuits - G.K.Mithal
6. Digital Electronics - R.P.Jain
7. Digital Fundamentals - Malvino & Bates
8. Network Analysis - G.K. Mithal
9. Network & Lines - Umesh Sinha
10. T.V.Engineering - Dhake
11. Radio Communication - G.K.Mithal
12. Colour Television - R.R.Ghulati
14. Fundamentals of Satellite Communication - Raja Ram, PHI
15. Fibre Optic Communication - Kaizer
16. Electronic Measurements & Instruments - Copper/ AK. Sahwany
17. Opto Electronic Devices by V.K. Mehta, S.Chand
18. Digital Applications – Tocci
19. Linear Ic’s - Gaykvad
XI. Model Papers

ELECTRONICS & COMMUNICATION ENGINEERING TECHNICIAN
I YEAR
CIRCUIT THEORY AND ELECTRONIC COMPONENTS

Time: 3hours        Max. Marks: 50

Section - A

Note: 1. Answer all Questions
2. Each Question Carries TWO Marks

1. Find the resistance value log using colour code
   1st Band - Brown
   2nd Band - Red
   3rd Band - Orange
   Tolerance - Gold

2. State Lenz’s Law
3. What are the specifications of the Transformer
4. Name the Different Types of Capacitor’s according to Die electronics
5. State Kirchhoff’s Law
6. Define the Terms frequency, average Value
7. Classify the switches according to Poles and Throws
8. What is meant by relay
9. What are the advantages of SMT over pin through Hold (PTH) molded
10. What are the applications of Secondary cell

SECTION-B

Note: 1. Answer any FIVE Question
2. Each Question Carry’s SIX Marks

11. Calculate the equivalent resistance of resistors connected in series
12. Explain the working principle of EHT Transformer
13. Find the Capacitance of Capacitor connected in parallel
14. Derive an expression of RLC series resonance of an A.C Circuits
15. Write the construction & Working PMMC Microphone
16. Write the Procedure what steps taken for preparing PCB
17. a). State faraday’s Laws
    b). What are the factors effects the Inductance value
18. Write the Construction & Working of a Led- Acid Cell with Neat Sketch
ELECTRONICS & COMMUNICATION ENGINEERING TECHNICIAN
ELECTRONIC DEVICES & CIRCUITS

1 YEAR

TIME: 3HRS
MAX.MARKS: 50

SECTION-A

Note: a. Answer all Questions 10x2 = 20
b. Each Question Carries Two Marks

1. Draw the Symbols of PNB & NPN Transistors
2. Define Ripple factor of Full Wave Reflection
3. List the types of Biasing Circuits used in Amplifier
4. Distinguish between Voltage Amplifier and Power Amplifier
5. What are the advantages of Crystal Oscillator over other type
6. What are the applications of PLL
7. Draw the symbols of SCR
8. List the application of all power Electronic Devices
9. Draw the Power control schematic Diagram
10. List the application of Photo diode and Photo Transformer

SECTION-B

Note: a. Answer any FIVE Question 5x6 = 30
b. Each Question Carry’s SIX Marks

11. Describe the working of PN Junction Diode under forward Bias and Draw its voltage characteristics
12. Draw & Describe the working of Centre Tapped Full wave rectifies with Wave forms
13. Compare input & Output Characterizes of CB, CC and CE configurations
14. Draw the circuit of Class- A Amplifier with Transformer at the Collector and Explain the operation
15. Draw & Explain working of R-C phase shift oscillator
16. Explain the working of Astrable Multi using 555 I.C.
17. Draw and Explain the V-I Characteristics of Traci under forward bias
18. Explain the construction & working Principle LCD
ELECTRONICS & COMMUNICATION ENGINEERING TECHNICIAN
DIGITAL ELECTRONICS & COMPUTER FUNDAMENTALS
I YEAR

TIME: 3HRS        MAX.MARKS: 50

SECTION-A

Note: a. Answer all Questions 10x2 = 20
      b. Each Question Carries Two Marks

1. Convert a Gillen Decimal Number in to binary, octal and Hexa decimal Number vice-versa
2. Write 1’s compliment and 2’s Compliment member for a Gillen binary number
3. List the different Digital logic families
4. What are the applications of Multi placers
5. State and need of resistors
6. State the Memory Terminology of access time and word length
7. Write the differences between static RAM & Dynamic RAM
8. Explain the concept of Router
9. What are the specifications of Network card
10. Write the application of (WAP) wide photo cell

SECTION-B

Note: 1. Answer any FIVE Question 5x6 = 30
      2. Each Question Carries SIX Marks

11. Explain Binary Octal Hexa Decimal number systems and Compare with Decimal Systems
12. Explain the working of Universal logic gates (NAND, NOR gates) using Truth Tables
13. Draw the full adder circuit and explain its operation with Truth Table
14. Draw and Explain the working of 4 Bit – 5 Bit left register
15. Explain D/a conversion using R-2R ladder Network
16. Explain Basic Principle of Working of Diode ROM
17. Explain the importance of catch memory
18. Write notes of creating a power point presentation editing and formatting
ELECTRONICS & COMMUNICATION ENGINEERING TECHNICIAN
COMMUNICATION ENGINEERING
II YEAR

TIME: 3HRS                        MAX.MARKS: 50

SECTION-A

Note: a. Answer all Questions      10x2 = 20
b. Each Question Carries Two Marks

1. Define the Modulation index of AM Signal
2. What is need of Modulation in Communication system
3. List the specifications of Transmitter
4. Define the Antenna Gain, Directivity
5. Define Sensitivity, Fidelity of a Receiver
6. Write about Woofer’s and Tweeter’s
7. List the user controls of Radio Receiver
8. What are the advantages of Magnetic Recording?
9. List the advantages of C D’s
10. What are the applications of OTDR

SECTION-B

Note: a. Answer any FIVE Question     5x6 = 30
b. Each Question Carry’s SIX Marks

12. Explain the Principle of working of AM Low level Transmitter with block diagram
13. Explain the function of yagi antenna
14. Explain the function of Dish Antenna system
15. Draw the Block diagram of P.A. system and explain the function of each block
16. Explain the function of compact disc player with block diagram
17. What are the applications of Optical Fiber in local telephone and cable?
18. Explain Optical pickup system.
SECTION-A

1. Explain the formation of Picture
2. What is the importance of blanking pulses and equalizing Pulses
3. Name the different types of camera Tubes
4. Define Term hue and saturation
5. What are the operating controls of TV Receiver
6. Application of LCD
7. Draw the block diagram of CATV
8. Define the terms, Modes and dispersion
9. Explain repeaters
10. Explain the principle of DWDM

SECTION-B

11. Draw the block diagram of Basic T.V. System and explain the function of each block
12. Describe the construction and working of image orthicon camera tube
13. Draw the Block diagram of Colour T.V. Receiver & Explain the Function of Each Block
14. Explain the working of Pin Diode used as Detector in optical Fiber Cable.
15. Explain the basic Fibre Optic Communication system with block diagram
16. Explain the working principle of DVD Player
17. Draw the block diagram of PA system and its working
18. Explain the Fibre in local area network.
MEASURING INSTRUMENTS, CONSUMER & POWER ELECTRONICS
II YEAR

TIME: 3HRS                        MAX.MARKS: 50

SECTION-A
Note: a. Answer all Questions
b. Each Question Carries Two Marks

1. Mention the applications of relays.
2. Write any two advantages between analogue and digital meters.
3. What are the applications of the connectors and cables?
4. What are the instruments used to measure inductance?
5. Mention the types of CRO’s.
6. Write the operating controls of signal generators.
7. Write specification of UPS.
8. Mention the servicing methods of UPS/Inverters.
9. Write any two differences between Telephone & Cell phone.
10. Mention the applications of the digital Cell Phones.

SECTION-B
Note: a. Answer any FIVE Question
b. Each Question Carry’s SIX Marks

11. Draw the block diagram of regulated DC power supply. Explain working of each block.
12. Explain the procedure, how to measure AC/DC voltages, currents and resistance by using the analogue multimeter.
13. Draw and explain working of loud speaker. Write applications.
15. Draw the block diagram of three phase inverter. Explain working.
17. Describe operation of Cellular system.
19. **Practical Question Paper**

By giving four or five practical questions from the prepared practical question paper and select one practical question by a lot

**Scheme of Evaluation:**

1. Record - 5 marks
2. Viva - 5 marks
3. Presentation- 10 marks
4. Practical- 30 marks

**Total** 50 marks
List of Participants:

1. **T. Ram Mohan, M.Tech, MISCE**  
   Head of the Electronics & Communication Dept.,  
   QQ Govt. Polytechnic, Hyderabad.

2. **Mr. C. Chandra Sekhar, J.D.**  
   ATI, Ramanthapur.

3. **R. Ramakrishnaiah,**  
   JL in EET,  
   P.S.C & K.V.S.C Govt. Jr. College,  
   Bommalasathram, Nandyal.

4. **A. Leela Krishna,**  
   Regional Manager, Rohde & Schwarz India Pvt. Ltd

5. **B. Gnana Sagar,**  
   Professor (FAC), S.I.V.E. & Deputy Director,  
   O/o the Commissioner of Intermediate Education,  
   Andhra Pradesh,  
   Hyderabad