

INDIRA TECHNICAL INSTITUTE EDUCATION SOCIETY
NASHIK

ELECTRONICS FACULTY COURSES - SYLLABII

[WITH COMPUTER HARDWARE & NETWORKING COURSES]



INDIRA TECHNICAL INSTITUTE EDUCATION SOCIETY NASHIK

CERTIFICATE AND DIPLOMA ELECTRONICS FACULTY & COMPUTER HARDWARE COURSES EXAMINATIONS

SYLLABUS & SCHEME OF THEORY & PRACTICAL EXAMINATIONS



SCHEME OF EXAMINATION

Sr. No.	EXAMINATION AND ABBREVIATION	PAGE NO.	THEORY PAPER	PRAC. MARKS
	CERTIFICATE COURSES			
1	Audio Radio Servicing [ARS]		One paper of 3 Hrs. 100 Marks	One Pract. of 2 Hrs. 60 Pract. + 20 Oral + 20 Journal = Total 100 Marks
2	Television Servicing [TVS]		- DO -	- DO -
3	Colour Television Servicing [CTVS]		- DO -	- DO -
4	Mobile Servicing [MS]		- DO -	- DO -
5	Computer Maintenance [CM]		- DO -	- DO -
6	Digital Electronics & Microprocessor [DEM]		- DO -	- DO -
7	Computer Networking [CCN]		- DO -	No Practical
	DIPLOMA ENGINEERING SERVICES COURSES			
8	Diploma Electronics Engg. Services [DEES – ER] (ARS + Separate Paper)		Two paper of 3 Hrs. 100 Marks	Two Pract. of 2 Hrs. each 60 Pract. + 20 Oral + 20 Journal = Total 100 Marks each
9	Diploma Video Television Engg. Services [DVTES] (TVS + CTVS + Separate Paper)		Three paper of 3 Hrs. 100 Marks	Two Pract. of 2 Hrs. each 60 Pract. + 20 Oral + 20 Journal = Total 100 Marks each
10	Diploma Electronics & Telecommunication Engg. Services [DETES] (DEES- ER – I + DEES – ER – II + DVTES – I + DVTES – II + DVTES – III)		Five paper of 3 Hrs. 100 Marks	Four Pract. of 2 Hrs. each 60 Pract. + 20 Oral + 20 Journal = Total 100 Marks each
11	Diploma Computer Hardware Engg. Services [DCHES] (DEM + CM)		Two paper of 3 Hrs. 100 Marks	Two Pract. of 2 Hrs. each 60 Pract. + 20 Oral + 20 Journal = Total 100 Marks each
12	Diploma Computer Networking Engg. Services [DCNES] (DEM + CM + CCN)		Three paper of 3 Hrs. 100 Marks	Three Pract. of 2 Hrs. each 60 Pract. + 20 Oral + 20 Journal = Total 100 Marks each

Minimum Passing for Theory -35 Marks Each. Minimum Passing for Practical - 40 Marks Each.

INDIRA TECHNICAL INSTITUTE EDUCATION SOCIETY NASHIK

CERTIFICATE COURSE AUDIO RADIO SERVICING [ARS]

EXAM SCHEME: **THEORY PAPER 100 MARKS – 3 HRS.**
 PRACTICAL 100 MARKS – 2 HRS.

[ARS / DEES (ER) – I / DETES - I]

THEORY SYLLABUS

1) BASIC ELECTRONICS: -

- a) Concept of AC & DC.
- b) C Theory : Peak to Peak, RMS and Average value. Phase and Wavelength. Power factors derivation for XL, XC (study of mathematical formulas, no calculations required)
- c) Concept of open and short circuit.
- d) HM's Law, Current, Voltage and Resistance relations, Power unit, Power consumption, Simple calculations.

2) ELECTRONIC COMPONENTS & SYMBOLS: -

A) Resistors: -

- a) Types of resistors & their ratings: -
Fixed Value: - Carbon, Metal Film, Wire Wound.
Variable: - Carbon, Wire Wound (LOG & LINEAR Controls)
- b) Colour code: - Fixed as well as Preset colour code values.
- c) Testing of resistors.
- d) Use of resistors.
- e) Series & Parallel connection of resistors. Simple calculations for series, parallel & series-parallel Combination.
- f) Special types of resistors (Symbols, functions & use only) PTC & NTC Thermister, Fuseable Resistor, LDR, VDR.

B) Condenser / Capacitor: -

- a) Types of Capacitor & function: -
Fixed Value: - Paper , Polyester, Ceramic, Mica, Styroflex, Tantalum Etc.
Semi variable: - Trimmer. Variable: - Ganged
Electrolytic capacitors.
- b) Colour code: - Values, Working Voltage, Tolerance and Temperature co-efficient of Electrostatic capacitors.
- c) Number code system.
- d) Testing of capacitors.
- e) Use of capacitors.
- f) Series & Parallel combination of capacitors.

C) Inductors & Transformers: -

- a) Definition of self-inductance & mutual inductance.
- b) Types of Transformers and their uses.
- c) Testing of Transformer & their uses.

D) Loudspeakers & Microphones: -

- a) Working principle of a loudspeaker.
- b) Construction of a P.M. loudspeaker.
- c) Woofers, Midrange / Squawkers and Tweeters.
- d) Specification of loudspeaker. (Impedance & Power rating)
- e) Testing of loudspeaker.
- f) Cross over networks.
- g) Different types of microphones and its construction. (Condenser, Crystal & Dynamic microphones)

E) Semiconductors: -

- a) Electrical properties of conductors, semiconductors and insulators.
- b) **Semiconductor:**
Definition : metals suitable for formation of P-type semiconductor and formation of N-type semiconductor, Types of impurities used for doping N-type and P-type semiconductor. Majority and minority charge carriers.
- c) **Diode:**
Junction diode, Point contact diode, Zenar diode, Light emitting diode. Symbol's used for diode.
Forward & Reverse characteristic and properties of diode. Zenar diode reverse characteristic only.
- d) **Transistor :**
Types of Transistor: - NPN, PNP. Germanium and silicon. Testing of transistor with help of multi-meter.
- e) **Integrated circuits (ICs).**
Introduction, Types of ICs, Merits and Demerits of ICs.

3) POWER SUPPLY: -

- a) Working of a Half wave, Full wave and Bridge rectifier.
- b) Regulated power supply employing: -
1) Zenar diode, 2) Series pass Transistor, 3) ICs of 78 -- & 79 -- Series.
- c) Simple RC filter circuit.

4) BASICS OF TRANSISTOR CIRCUITS: -

- a) **Biasing of transistor: -**
Different types of biasing circuits used to bias the transistor. (Fix bias, Potential divider bias, Self bias, Temperature compensated bias) Merits and Demerits of bias circuits.
- b) Thermal run-away of transistor. Working of Heat sink.
- c) **Classes of amplifier: -**
Study and use of class A amplifier, Class B amplifier and Class C amplifier.
- d) **Configuration of amplifier: -**
Study of common base amplifier, common emitter amplifier and common collector amplifier. Definition of Alpha (α) and Beta (β).
- e) Study of single stage voltage / current amplifier.
- f) **Types of signal couplings methods: -**
R-C coupling, L-C coupling, transformer coupling and direct coupling circuits used in transistor amplifier. Merits and demerits of each coupling circuit. Definition of Gain and Bandwidth.
- g) **Signal feedback in the amplifier :-**
Need of signal feed back, +ve feed back & -ve feed back. There effects on the working of the amplifier.

5) AUDIO AMPLIFIER: -

- a) Single Transformer & Transformer less push-pull out-put amplifier.
- b) Driver and pre amplifier circuits (Full audio amplifier circuit).
- c) Stereo amplifier circuits. (Discrete component's and IC circuits).
- d) Intercom circuits and its servicing (one master & two slave).

- e) Simple audio tape recorder circuits.
(Head pre amplifier and main amplifier with record - play back switch).
- f) P.A. system (Block diagram).
- g) IC audio amplifier circuit employing ICs: TBA 810, etc.

6) AUDIO EQUIPMENT: -

- a) Principle of magnetic recoding. Eddy current and Hysteresis losses.
Magnetic tape, Tape coating material.
- b) **Audio Heads:** - Working principle and construction of audio heads. Importance of head gap, Alignment & cores of Audio.
- c) **Tape Mechanism:** - Study of different tape recorders & tape deck mechanisms.
- d) **CD Player:** -
 - 1) Block diagram of audio CD player.
 - 2) Working of CD player mechanism.
 - 3) Merits & demerits of CD.
 - 4) Fault finding in CD player.

7) OSCILLATORS: -

Principle of oscillators. L-C oscillator, Hartley & Colpitt oscillators.

8) CONCEPT OF MODULATION / TRANSMISSION: -

- a) Amplitude modulation (AM).
- b) Frequency modulation (FM).
- c) Block diagram of AM and FM transmitter.
- d) Pulse modulation (PM).
- e) Wave propagation (DSB, SSB).

9) SUPERHETRODYNE RECEIVER: -

- a) Block diagram of super heterodyne (AM, FM mono/stereo & AM/FM) receiver with waveform.
- b) Converter stage amplifier (Single band & Multi band).
- c) Antenna (Ferrite, Loop & Telescope).
- d) I.F. amplifier basic circuit.
- e) Detector circuit, RF filters circuit.
- f) AGC/AVC circuit.
- g) Study of the equipment used in IF and RF alignment procedure.
- h) Alignment procedure of IF and RF circuit.
- i) Study of AM/FM receiver.
- j) Advantages and disadvantages of FM receiver.
- k) Study of FM mike.

10) FAULT FINDING PROCEDURE: -

Study of various test to locate the fault in given Tape recorder and Transistor receiver circuit.

GUIDELINES FOR QUESTION PAPER SETTERS - ARS / DEES (ER) – I / DETES – I

There will be total 6 Compulsory questions. Q 1 is objective question and asks on full syllabus.

		Marks
Q No.1	A) Fill in the blanks.	(05)
	B) Match the following.	(05)
	C) Write short answer.(answers should not be more than 2 lines)	(10)
Q No.2	A) Topic 2A, 2B & 2C.	(08)
	B) Topic 2D & Topic 2E.	(08)
Q No.3	A) Topic 4a, 4b, 4c.	(04)
	B) Topic 4d, 4e, 4f, 4g.	(04)
	C) Topic 6a, 6b, 6c.	(04)

D)	Topic 6d.	(04)
Q No.4 A)	Topic 5.	(08)
B)	Topic 9.	(08)
Q No.5 A)	Topic 1, 3 & 7.	(08)
B)	Topic 8.	(08)
Q No.6	From the given circuit diagram & related to Topic No. 10.	
A)	Topic No. 10.	(08)
B)	Topic No. 10.	(08)

PRACTICAL EXAMINATION FOR: - ARS / DEES (ER) – I / DETES – I

Each candidate will have to locate three faults out of which one must be in audio equipments & two faults from radio receiver. Each fault will give 08 marks to locate fault and draw the circuits. 12 marks for write up. The write up indicate the logical method of located faults.

Journal / Term work	20 Marks.
(Journal should contain minimum 50 recommended experiments)	
Oral examination	20 Marks.

RECOMMENDED BOOKS FOR REFERENCE

Basic Radio & Television	S.P. Sharma.
Fundamental of Electrical Engg. & Electronics	B.L. Theraja.
Servicing Transistor Radio	R.C.Vijay
Tape Recorder Servicing	R.C.Vijay
Basic Radio Vol. I,II & V.	Marvin Tapper
Modern CD Player	BPB



INDIRA TECHNICAL INSTITUTE EDUCATION SOCIETY NASHIK

CERTIFICATE COURSE TELEVISION SERVICING [TVS]

EXAM SCHEME: THEORY PAPER 100 MARKS – 3 HRS.
PRACTICAL 100 MARKS – 2 HRS.

[TVS / DVTES – I / DETES – III]

THEORY SYLLABUS

1) PRINCIPLES OF MONOCHROME TELEVISION & PICTURE TRANSMISSION: -

- a) Picture elements, Video frequency spectrum, Motion picture, Persistence of vision, Flicker.
- b) Picture Brightness, Contrast, Aspect ratio, viewing angle.
- c) Raster formation, Resolution, Scanning, Interlace scanning, CCIR B-Standard, Line frequency, Frame frequency. Need of H & V synchronization with respect to picture. Advantage's Positive and Negative modulation, Composite Video Signal (CVS). Need of H & V blanking, vestigial side band transmission.
- d) Block diagram of Monochrome transmitter.

2) ANTENNA & TUNER: -

- a) Simple indoor and outdoor antenna.
- b) Installation of antenna, Reflectors and Directors, Transmission line, Co-axial cable, Ballun transformer, Booster amplifier.
- c) Basic single channel TV tuner (RF amplifier, Local oscillator & Mixer amplifier) block level.
- d) VHF multi-channel tuner, VHF/UHF multi-channel tuner (Block level).
- e) Electronic tuner, Programmer selection switches circuits, Different type's of fine-tuning circuit, Automatic fine tuning circuit (AFT).

3) VISION I.F. AMPLIFIER (V.I.F.) / VIDEO DETECTOR: -

Study of IF band pass frequency, staggered tuning. SAW filter, Coupling circuit's, Monochrome IF response, Gain control circuit, Simple AGC, Delayed AGC circuit, AGC amplifier. Diode detector and synchronous detector. IC CA 3068, TDA 3540/3541, μ PC 1366 circuits.

4) VIDEO AMPLIFIER: -

- a) Video frequency response / Frequency compensation methods & types of coupling.
- b) D.C. restoration circuit.
- c) Video amplifier gain control (contrast) circuits.
- d) Blanking circuits.

5) PICTURE TUBE: -

- a) Basic construction of BW picture tube, Electronic gun, TV screen, Function of electronic gun electrodes.
- b) Deflection: - Electrostatic / Electromagnetic type.
- c) Contrast problem, ion burn problem & their solution. Aluminized screen.
- d) Geometrical distortion in raster.
- e) Protection of picture tube: - Flash over, Implosion, Screen burn.
- f) Picture tube electronic circuit.
- g) Precautionary methods at the time of replacement & Installation of picture tube.
- h) Picture tube numbers.

6) SOUND: -

- a) Study of sound IF, Introduction of sound detector circuit.
- b) IC's used for sound IF and audio amplifier TDA 1190, μ PC, CA 3065, TBA 120, TDA 810 & μ PC 1353.

7) POWER SUPPLY: -

- a) Simple low voltage power supply.
- b) Two transistors regulated power supply.
- c) Regulated power supply. (Three transistor)
- d) Switch Mode Power Supply SMPS (block diagram)

8) SCANNING CIRCUITS: -

A) SYNCHRONISATION: -

- a) Need of synchronization.
- b) Synchronization (Sync) separator circuit: - Basic circuit, Integrator & Differentiator circuit, Transistorized sync separator circuit.
- c) Need of Requirement of automatic frequency correction (AFC) circuit, Anti Hunt network in a TV receiver.

B) HORIZONTAL & VERTICAL CIRCUIT: -

Horizontal scanning circuit: - Different horizontal oscillator & automatic frequency correction (A.F.C.). horizontal driver and output circuit used in monochrome television circuit. EHT voltage stability & effect on picture. Auxiliary low voltage power supply.

Vertical scanning circuit: - Different vertical oscillator, driver & output circuits. Function and working of a Height control, Vertical Hold & Vertical linearity control.

9) TROUBLE SHOOTING TECHNIQUE: -

- a) Preliminary test for B/W television servicing.
- b) Precaution taken at the time of B/W TV servicing.
- c) Systematic fault finding procedure for the following symptoms:
 - 01) No raster, No sound (Set dead).
 - 02) No raster, sound ok.
 - 03) Horizontal line on the screen.
 - 04) No picture, no sound, raster ok.
 - 05) Vertical rolling
 - 06) No picture, sound ok, raster ok.
 - 07) Vertical line on screen.
 - 08) Horizontal rolling
 - 09) Picture ok, No sound.
 - 10) Non linear picture
 - 11) Total sync loss.
 - 12) Over contrast.
 - 15) No picture, no sound raster with retrace lines.
 - 14) Picture & sound ok retrace line on the screen.

10) SERVICING TOOLS & EQUIPMENTS: -

The Equipments that is required for Trouble shooting and Alignment in a B/W Television are listed below. Give the brief description and working of the front control panel and application of these test instruments in Servicing.

- 1) Multi meter. 2) Oscilloscope 3) Pattern Generator 4) Sweep Generator

GUIDELINES FOR QUESTION PAPER SETTERS (TVS / DVTS - I / DETES – III)

There will be total 6 Compulsory questions. Q 1 is objective question and asks on full syllabus.

Question Paper set on **Dawoo Kit** and **SRE kit** circuit.

Q No.1 A) Fill in the blanks.

Marks

(05)

B) Match the following.

(05)

C) Write short answer.(answers should not be more than 2 lines)

(10)

Q No.2 A) Topic 1.	(08)
B) Topic 2.	(04)
C) Topic 3.	(04)
Q No.3A) Topic 4.	(08)
B) Topic 5.	(08)
Q No.4A) Topic 6.	(04)
B) Topic 7.	(08)
C) Topic 10.	(04)
Q No.5A) Topic 8 A.	(08)
B) Topic 8 B.	(08)
Q No.6 From the given diagram & related to topic 9	
A) Topic No. 9.	(08)
B) Topic No. 9.	(08)

PRACTICAL EXAMINATION FOR: - TVS / DVTES – I / DETES – III

Each candidate will have to locate three faults. Each fault will give 8 marks to locate fault and 12 marks for write up. One fault in Power supply or CRT circuit, One fault in Video Tuner, VIF, Sound circuit and One fault in Scanning circuits. The write up indicate the logical method of located faults.

Journal / Term work	20 Marks.
(Journal should contain minimum 50 recommended experiments)	
Oral examination	20 Marks.

RECOMMENDED BOOKS FOR REFERENCE

Monochrome and colour Television	R.R.Gulati
Television and video engineering	A.M.Dhake
T.V. Servicing made easy	R.C.Vijay



INDIRA TECHNICAL INSTITUTE EDUCATION SOCIETY NASHIK

CERTIFICATE COURSE COLOUR TELEVISION SERVICING [CTVS]

EXAM SCHEME: THEORY PAPER 100 MARKS – 3 HRS.
PRACTICAL 100 MARKS – 2 HRS.

[CTVS / DVTES – II / DETES – IV]

THEORY SYLLABUS

1) COLOUR PHYSICS: -

- a) Colour fundamentals, Visible spectrum of electromagnetic waves.
- b) Colour Mixing: - 1) Subtractive mixing. 2) Additive mixing.
- c) Chrominance signal response of Human eye.
- d) Concepts of Luminance, Hue and Saturation.
- e) Luminance signal/Chrominance signal.
- f) Different Transmitting colour TV signal
1) PAL 2) NTSC 3) SECAM
- g) PAL coder block diagram.
- h) Frequency interleaving, choice of colour sub carrier.
- i) Composite colour video signal (CCVS) / Sub carrier suppress.
- j) PAL Decoder block diagram.

2) COLOUR DEMODULATION CIRCUIT: -

- a) Chroma band pass amplifier.
- b) Burst gate amplifier, Sand castle pulses.
- c) Automatic colour control circuit (AGC).
- d) Colour killer circuit.
- e) Colour sub carrier generator / Automatic frequency & Phase control circuit (AFPC).
- f) Ident pulse generator.
- g) PAL line driver / PAL delay line, PAL switch.
- h) Colour demodulator.
- i) RGB matrix.
- j) RGB video amplifier.
- k) Colour PAL decoder IC circuit.

3) COLOUR PICTURE TUBE: -

- a) Colour picture tube: - Shadow mask tube, Trinitron tube, Inline Picture tube. Automatic degaussing circuit, Gray scale, Purity convergence & Pincushion adjustment.
- b) Picture tube electronic circuit.
- c) Precautionary methods at the time of replacement & Installation of picture tube

4) VISION I.F. AMPLIFIER (V.I.F.) / VIDEO DETECTOR: -

Study of IF band pass frequency, staggered tuning. SAW filter, Coupling circuit's, IF response, Gain control circuit. Noise canceling circuit, AFT circuit. IC CA 3068, TA 7680, TDA 3540/3541, μ PC 1366 circuits.

5) VIDEO AMPLIFIER: - (Revision)

- a) Video frequency response / Frequency compensation methods.
- b) D.C. restoration circuit.
- c) Video amplifier gain control (contrast) circuits.
- d) Retrace blanking circuits.
- e) 'Y' Delay Line, Luminance Amplifier, Beam current limiting.

6) SOUND: - (Revision)

- a) Study of sound IF, Introduction of sound detector circuit.
- b) IC's used for sound IF and audio amplifier TDA 1190, μ PC 1353.
- c) Sound mute circuit.

7) REMOTE CONTROL: -

- a) Types of Remotes.
- b) Pulse modulation (P.P.M encoding).
- c) Infra Red transmitter & Receiver.
- d) Block diagram of remote control. (Transmitter and Receiver).
- e) Testing of remote control.

8) POWER SUPPLY: -

- a) Regulated power supply.
- b) Switch Mode Power Supply SMPS.
- c) STR power supply.
- d) Advantages & disadvantages of SMPS & STR power supply.

9) SCANNING CIRCUITS: - (Revision)

A) SYNCHRONISATION: -

- a) Need of synchronization.
- b) Synchronization (Sync) separator circuit: - Basic circuit, Integrator & Differentiator circuit, Transistorized sync separator circuit.
- c) Need of Requirement of automatic frequency correction (AFC) circuit, Anti Hunt network in a TV receiver.

B) HORIZONTAL & VERTICAL CIRCUIT: -

Horizontal scanning circuit: - Different horizontal oscillator & automatic frequency correction (A.F.C.). horizontal driver and output circuit used in monochrome television circuit. EHT voltage stability & effect on picture. Auxiliary low voltage power supply.

Vertical scanning circuit: - Different vertical oscillator, driver & output circuits. Function and working of a Height control, Vertical Hold & Vertical linearity control.

10) TROUBLE SHOOTING TECHNIQUE: -

- a) Preliminary test for colour television servicing.
- b) Precaution taken at the time of colour TV servicing.
- c) Systematic fault finding procedure for the following symptoms:
 - 1) No colour B/W picture OK.
 - 2) Weak colours.
 - 2) Intermittent colours.
 - 4) No picture, raster with retrace lines.
 - 5) Colour snow.
 - 6) Wrong colour
 - 7) Negative colour picture.
- d) Colour TV
 - 1) Fonda Kit (Toshiba TV circuit): - IC CD 7680, CD 7698, M220D0105F (System control IC) & STR 5314
 - 2) Fonda Kit (Sanyo TV circuit): -IC 51R4-3800 (System control IC), 24C16 (Memory IC), LA7681, LC75342, LA4277, LA7840 & 7805.

11) SERVICING TOOLS & EQUIPMENTS: -

The Equipments that is required for Trouble shooting and Alignment in a B/W and colour Television are listed below. Give the brief description and working of the front control panel and application of these test instruments in Servicing.

- 1) D.M.M.
- 2) Marker Generator
- 3) Wobbullo Scope.

GUIDELINES FOR QUESTION PAPER SETTERS - CTVS / DVTES - II / DETES – IV

There will be total 6 Compulsory questions. Q 1 is objective question and asks on full syllabus. Question paper set on Fonda Kit 1 & 2 circuit.

	Marks
Q No.1 A) Fill in the blanks.	(05)
B) Match the following.	(05)
C) Write short answer.(answers should not be more than 2 lines)	(10)
Q No.2 A) Topic 1.	(08)
B) Topic 3.	(08)
Q No.3 A) Topic 4.	(04)
B) Topic 5.	(08)
C) Topic 6.	(04)
Q No.4 A) Topic 8.	(08)
B) Topic 7.	(04)
C) Topic 11.	(04)
Q No.5 A) Topic 9.	(04)
B) Topic 2.	(12)
Q No.6 From the given diagram & related to Topic No. 10	
A) Topic No. 10.	(08)
B) Topic No. 10.	(08)

PRACTICAL EXAMINATION FOR: - CTVS / DVTES - II / DETES – IV

Each candidate will have to locate three faults. Each fault will give 8 marks to locate fault and 12 marks for write up. One fault in Power supply or CRT circuit, One fault in Video Tuner, VIF, Sound circuit and One fault in Scanning circuits. The write up indicate the logical method of located faults.

Journal / Term work	20 Marks.
(Journal should contain minimum 50 recommended experiments)	
Oral examination	20 Marks.

RECOMMENDED BOOKS FOR REFERENCE

Monochrome and colour Television	R.R.Gulati
Television and video engineering	A.M.Dhake
T.V. Servicing made easy	R.C.Vijay
Colour Television Theory and Practice	S.P.Bali
Colour Television Theory and Principles	R.R.Gulati.



INDIRA TECHNICAL INSTITUTE EDUCATION SOCIETY NASHIK

CERTIFICATE COURSE MOBILE SERVICING [MS]

EXAM SCHEME: THEORY PAPER 100 MARKS – 3 HRS.

PRACTICAL 100 MARKS – 2 HRS.

THEORY SYLLABUS

1) INTRODUCTION TO BASIC ELECTRONICS.

- a) Types of Materials viz. Insulator, Conductor, Semiconductor etc.
- b) Concept of AC & DC voltage & current, Power, Ohms Law & Mobile Battery & Charger.
- c) Resistor, Capacitor, Transformer,
- d) Diode, Transistors, ICs (LSI, VLSI), LED & LCD Display etc.

2) INTRODUCTION TO DIGITAL ELECTRONICS.

- a) Binary system (Different number Systems, Decimal, Binary, Hexadecimal, Conversion of one No. system to another No. system.
- b) Logic gates (AND, NAND, OR, NOR & NOT)
- c) Types of Memory (ROM, PROM, EPROM, EEPROM, DRAM, SRAM, VRAM, Cache Memory, Primary, Secondary Memory etc.)

3) INTRODUCTION TO COMPUTER SYSTEM.

- a) Modulation, Demodulation, Modem working & types, Digital communication (transmissions & Receivers). Mobile TV signals.
- b) DOS, Windows operating systems (Hardware, Software, Desktop settings, Specializes software).
- c) Internet Browsing (E-mail, searching information on the internet, Downloading information, files, software & Drivers.

4) INTRODUCTION TO BASIC TELEPHONE SYSTEM.

- a) Working of Landline Telephone system & Mobile Telephone.
- b) Cells of network, Antennas, Grid or cells, Range of operation of Mobile phone, Network of Mobile connectivity
- c) Different Mobile Operators (Hutch, Airtel, BPL etc.)
- d) Sim card (Storage capacity, Lock/unlock Sim card.

5) OPERATION AND INTRODUCTION TO MOBILE HANDSET.

- a) Different Mobile Models: - 3310, 6110, 6600, Nokia, Tata Indicom & LG.
- b) Difference between WLL & GSM Technology.
- c) Introduction to CDMA Technology.
- d) Function of Different menus available in Mobile Hand set
- e) Receiving & sending SMS / MMS
- f) Internet cables, GPRS, WLL, Software for Internet.

6) COMMON FAULT IN MOBILE HAND SET.

- a) Disassembly of cell phone, Hand set circuit Analysis and Troubleshooting, common fault symptoms,
- b) Troubleshooting on hardware problems
- c) Phone is totally dead, Virus, Flash Programming doesn't work, Power doesn't stay on or phone is jammed,

Display information – Contact service, Audio failure, Charger Failure, Receiver Faults, Transmitter Faults.

7) INTRODUCTION TO FUTURE OF MOBILE PHONE.

Wap, GPRS, Blue Tooth, PDA, Palm Tops, Hands held PCS with Phone.

8) EQUIPMENTS.

Soldering Iron, Soldering Stations, Hot air gun, Wave solder, Digital Multi meter, Oscilloscope, Logic Probe, Memory Card reader, Different wires / Interfaces, Hands free kit & car charger

GUIDELINES FOR QUESTION PAPER SETTERS - MOBILE SERVICING (MS)

There will be total 6 Compulsory questions. Q 1 is objective question and asks on full syllabus.

	Marks
Q.No.1 A) Fill in the blanks.	(05)
B) Match the following.	(05)
C) Write short answer.(answers should not be more than 2 lines)	(10)

Q.No.2 A) Topic 1 & 2. (16)

Q.No.3 A) Topic 3 & 4. (16)

Q.No.4 A) Topic 5. (16)

Q.No.5 A) Topic 8 & 9. (16)

No Question ask to draw circuit diagram but faults can be ask on given circuit diagram

.No.6 A) Topic 7. (16)

PRACTICAL EXAMINATION FOR: - MOBILE SERVICING (MS)

Each candidate will have to perform three Faults. Two faults in Hardware section and performing one Experiment on Software section (Installation/up gradation of Mobile Handset). Each faults & Installation will give 8 Marks & 12 Marks each for writing procedure.

Journal / Term work	20 Marks.
(Journal should contain minimum 25 recommended experiments)	
Oral examination	20 Marks.

RECOMMENDED BOOKS FOR REFERENCE

Mobile Phone	Agashe.
Mobile Phone	Lotia.
Mobile Communication	C. Y. Lee.
Mobile Communication	Mzda.
Digital Principles and application	Malvino & Leach.



INDIRA TECHNICAL INSTITUTE EDUCATION SOCIETY NASHIK

CERTIFICATE COURSE DIGITAL ELECTRONICS & MICROPROCESSOR [DEM]

EXAM SCHEME: THEORY PAPER 100 MARKS – 3 HRS.
PRACTICAL 100 MARKS – 2 HRS.

[DEM / DCHES - I / DCNES – I]

THEORY SYLLABUS

1) BASIC ELECTRONICS: -

A) BASIC ELECTRONICS: -

- a) Concept of open & short circuit.
- b) Ohm's law, current, voltage & Resistance relation, Power unit Power consumption.
- c) Soldering & de-soldering Technique.

B) ELECTRONIC COMPONENTS: -

Component's: - Resistor, capacitor, inductor, Transformer.

- 1) Types 2) Values (by colour code, Number system) 3) Testing 4) Use's

C) SEMICONDUCTOR: -

- a) Electric properties of conductor, Semi-conductor & Insulator.
- b) Definition of Semi-conductor.
Suitable material for formation of P-Type & N-Type Semi-conductor. Impurities of P-Type & N-Type material.
- c) Diode
Junction Diode, Zener Diode, Light Emitted Diode, photo Diode
1) Types 2) Number System 3) Testing 4) Uses.
- d) Transistor
Types: -NPN & PNP ,Germanium & Silicon. Testing of Transistor using Multimeter.
- e) Integrated circuit (IC's)
Introduction, Types of IC's, Merit & De-merit of IC's.

2) BASIC OF TRANSISTOR CIRCUIT: -

- a) Biasing of Transistor.
Fixed bias, Potential divider bias, Self bias.
What is Thermal run-away of transistor and what is the solution on it?
- b) Class of Amplifier: - Basic circuit of class –A, class-B, class-C Amplifier.
- c) Configuration of transistor: -
Common base amplifier, common Emitter amplifier, Common collector Amplifier.
Definition of Alpha & Beta.
- d) Study of Single Stage amplifier.
- e) Types of coupling R-C, L-C, Transformer & Direct coupling circuit. Merit & De-merit of it.

3) DIGITAL ELECTRONICS: -

- a) Different number system, Study of different codes, Study of Logical Gates, Binary adder & subtractor, Demorgan's law.
- b) Study of FLIP-FLOP : SR, JK, MS-JK, D, SR-T.
- c) Counter : Binary, BCD, Mod-Nth, UP and Down, Ring counter.
- d) Registers : Serial and parallel registers. (Right/Left)

- e) A/D and D/A Converters: Basic D/A converter, Ladder and Weighted type.
Basic A/D converter, SAR, Counter ramp type.
- f) Combination network using Gates: Encoder, Decoder, Parity encoder, Parity generator. Multiplexer, De-Multiplexer.
- g) Semiconductor Memory : RAM, ROM, PROM, EPROM, EEPROM, Static and dynamic memory.
- h) Flash memory.

4) MICROPROCESSORS: -

- a) Introduction to 8085 Microprocessor, Block diagram of 8085 Microprocessor.
- b) 8085 Microprocessors system organization & its Terminology.
- c) Block diagram of 8085 kit., Study & Interfacing of μ p kit (keyboard, LED, LCD, seven segment display)
- d) With reference to 8085 microprocessor, study the following interfacing IC's : 8150, 8251, 8253, 8259, 8279, 74244, 74245.
- e) Programming in 8085 kit.
1) Flow charts. 2) 8085 Instruction set. 3) Simple programmed as per the given practical list.

5) SWITCH MODE POWER SUPPLY (SMPS): -

- a) Basic principal of SMPS.
- b) Block diagram of AT SMPS & AT-X SMPS.
- c) Colour code of wires, different voltages and current outputs.
- d) Introduction to UPS, Block diagram, Installation.

6) KEYBOARD AND MOUSE: -

- a) Types of Key's
- b) Type's of Keyboard's
- c) Testing of Keyboard using KBD utility.
- d) Types of Mouse and his internal physical layout.
- e) Interconnection of PC-5pin keyboard socket, PS-2 keyboard, 9/15 pin Serial Mouse, PS-2 Mouse.

7) ELECTRONIC DISPLAY: -

Seven Segment LED / LCD Display, Gas discharge display.

8) TEST INSTRUMENTS: -

Application & use of Oscilloscope, DMM, Frequency meter, logic probe, Logic analyzer, Block diagram of Digital voltmeter, Digital frequency meter, Digital clock.

GUIDELINES FOR QUESTION PAPER SETTERS - DEM / DCHES – I / DCNES – I

	Marks
Q.No.1A) Fill in the blanks.	(05)
B) Match the following.	(05)
C) Write short answer.(answers should not be more than 2 lines)	(10)
Q.No.2 A) Topic 1	(08)
B) Topic 2	(08)
Q.No.3 A) Topic 3a, b, c & d	(08)
B) Topic 3e	(04)
C) Topic 3f & g	(04)

Q.No.4 A) Topic 5	(08)
B) Topic 6)	(08)
Q.No.5 A) Topic 4c &7	(08)
B) Topic 8	(08)
Q.No.6 A) Topic 4a,b & d.	(08)
B) Topic 4e	(08)

PRACTICAL EXAMINATION FOR: - DEM / DCHES - I / DCNES – I

Each candidate will have to perform 2 Experiments. One Experiments based on digital Electronics, second experiments based on Microprocessor program. Performing Experiments 20 Marks each & writing procedure/program 10 Marks each.

Journal / Term work	20 Marks.
(Journal should contain minimum 25 recommended experiments)	
Oral examination	20 Marks.

RECOMMENDED BOOKS FOR REFERENCE

Digital Electronics practical devices.	Jain & Anand.
Digital principles and application	Malvino & Leach.
Microprocessor architecture programming and application	Gaonkar.
Fundamental of Electrical Engg. & Electronics	B.L. Theraja.
Digital Electronics Practice devices	Jain / Anand
Modern All About S.M.P.S.	Lotia / Nair
Intel microcomputer data book.	



INDIRA TECHNICAL INSTITUTE EDUCATION SOCIETY NASHIK

CERTIFICATE COURSE COMPUTER MAINTENANCE [CM]

**EXAM SCHEME: THEORY PAPER 100 MARKS – 3 HRS.
PRACTICAL 100 MARKS – 2 HRS.**

[CM / DCHES – II / DCNES – II]

THEORY SYLLABUS

1) IBM PC – SYSTEM

- a) Block diagram of PC_ System. Different Input and Output devices.
- b) Physical layout of Mother board (Socket-7, Slot-1 and Dual)
- c) Different CPU (P-I, P-II, P-III and P-IV) advantages and disadvantages.
- d) Study of RAM used in PC.
- e) Different connectors, Cables and Sockets use in system.
- f) Study of C-MOS (Award/AMI bios)

2) F.D.D. & H.D.D.

- a) Study of FDD and HDD drive (Types Capacity, Size, etc.)
- b) Physical installation on FDD and HDD.
- c) Jumper Setting of HDD, Twisted cable of FDD.
- d) Formatting of Floppy disk.
- e) Partitioning and formatting of Hard disk.
- f) Study of different Interface (IDE, ATA, WATA, ATAPI, etc.)

3) MONITOR (VIDEO DISPLAY UNIT)

- a) Study of different video display (monitor/LCD)
- b) Block diagram of mono VGA monitor/ Colour VGA monitor.
- c) Study of different display adopter cards.
- d) Study of Resolution and its setting.
- e) Installation of Display adopter.

4) SYSTEM SOFTWARE & DIAGNOSTIC TOOLS

- a) Installation of Window. (Win 95/98)
- b) Study of Internal and External DOS Commands (Dir, Drive select, Check disk, CD, MD, RD, Copy, Fdisk, Format, Disk copy, Scandisk, Ver., Time, Date, etc.)
- c) Study of Viruses and antidotes : Norton, PC-Cline, etc.
- d) Study of Window (Control Panel, System Tools, Device manager, Display properties)
- e) Introduction for use of Advances diagnostics (DM, Partition Magic, Defragmentation, etc.)
- f) Study of Internet (To open E-mail account, Send and receive the E-mail)

5) CD-R/W & MODEM

- a) Study of CD-ROM and installation under DOS.
- b) Installation of CD-W under windows.
- c) Study of Modem (Internal and External).
- d) Installation of Modem.

- e) Inter connection of CD-R/W, DVD, External Modem and PC- System.
- f) Installation of DVD.

6) DIFFERENT ADON CARDS (Sound, TV Tuner, Network, DVD, Web. camera, etc.)

- a) Installation of Sound card drivers.
- b) Installation of TV Tuner card.
- c) Installation of Network Adopter.
- d) Installation of Web Camera.

7) PRINTER

- a) Types of Printer (DOT matrix, Inject, Laser Printer).
- b) Interconnection of PC and Printer.
- c) Installation of Printer in Window and DOS.
- d) Study of Printer sharing switch.

8) SCANNER

- a) Types of scanner.
- b) Study of Block diagram of scanner.
- c) Study of Installation of scanner

9) DIGNOSTIC

- a) Preventive Maintenance.
- b) Booting Problems.
- c) FDD/HDD Problems.
- d) Keyboard / Mouse Problems
- e) Printer Problems.

GUIDELINES FOR QUESTION PAPER SETTERS - CM / DCNES – II / DCHES – II

	Marks
Q.No.1 A) Fill in the blanks.	(05)
B) Match the following.	(05)
C) Write short answer.(answers should not be more than 2 lines)	(10)
Q.No.2 A) Topic 1.	(08)
B) Topic 2.	(08)
Q.No.3 A) Topic 3.	(08)
B) Topic 5.	(08)
Q.No.4 A) Topic 4a, b & c.	(08)
B) Topic 4d, e & f.	(08)
Q.No.5 A) Topic 6.	(08)
B) Topic 7 & 8.	(08)
Q.No.6 Debugging in pc system with peripheral on Topic No. 9.	
A) Topic No. 9.	(08)
B) Topic No. 9.	(08)

PRACTICAL EXAMINATION FOR: - CM / DCHES – II / DCNES – II

Each candidate will have to locate three faults. Two faults in system and performing one Experiment on Installation of Software/Hardware or Formatting HDD/FDD. Each faults & Installation/formatting will give 8 Marks & 12 Marks each for writing procedure.

Journal / Term work
(Journal should contain minimum **30** recommended experiments)
Oral examination

20 Marks.

20 Marks.

RECOMMENDED BOOKS FOR REFERENCE

Modern All About S.M.P.S.

Lotia / Nair

Intel microcomputer data book.

PC Made simple

Subhash Mehta

PC Upgrading & Maintenance

BPB

IBM PC Clones (II edition)

Govindrajalu

PC Magazine

Modern All About Floppy drive

Lotia / Nair

Modern All About Monitors

Lotia / Nair

Digital electronics practical devices.

Jain & Anand.

Digital principles and application

Malvino & Leach.

Intel microcomputer data book.



ITES ENGINEERING AND VOCATIONAL EXAMINATION BOARD NASHIK

CERTIFICATE COURSE COMPUTER NETWORKING [CCN]

EXAM SCHEME: THEORY PAPER ONLY - 100 MARKS – 3 HRS.

[CCN / DCNES – III]

THEORY SYLLABUS

1) REVISION OF SYSTEM SOFTWARE & DIAGNOSTIC TOOLS: -

- a) Installation of Window. (Win 95/98/98SE)
- b) Study of Internal and External DOS Commands (Dir, Drive select, Check disk, CD, MD, RD, Copy, Fdisk, Format, Disk copy, Scandisk, Ver., Time, Date, etc.)
- c) Study of Viruses and antidotes : Norton, PC-Clint, etc.
- d) Study of Window (Control Panel, System Tools, Device manager, Display properties)
- e) Introduction for use of Advances diagnostics (DM, Partition Magic, Defragmentation, etc.)
- f) Study of Internet (To open E-mail account, Send and receive the E-mail)

2) NETWORKING BASICS: -

- a) Networking : Introduction ,Topology ,Network components.
- b) Network Media: UTP, STP, Coaxial cable, Optical Fiber .
- c) Protocols –Definition, Types (TCP/IP PROTOCOL- advantages, Addressing)
- d) Network Architecture : Ethernet, Token Ring, Apple Talk, Arcnet .
- e) Network Access Methods.
- f) Concept of OSI Model

3) NETWORK ENVIRONMENT: -

- a) Network Operation : Server , NOS, Workstation ,Services , Applications .
- b) E-Mail Standards.
- c) Client/Server Environment.
- d) Network Management.
- e) Workgroup Environment.
- f) Network Data Security – Password, Access Control, Data Encryption ,
- g) Audition, Virus Protection, Back Up.
- h) Data Transfers Modem, PSTN, Leased lines, ISDN .
- i) Repeaters, Bridges, Routers, Brouters (Introduction).
- j) Router Protols. Gateways. WAN Types.

4) LINUX: -

- a) Linux installation – Server & Workstation.
- b) Configuration & Operation of Linux Workstation.
- c) Basic Linux commands.

5) A) INTRODUCTION TO WINDOWS XP, NETWORK OPERATING SYSTEM (NOS) & NOVEL NETWORK

B) WINDOW 2000 SERVER & WORKSTATION: -

- a) Installation of Window 2000 Server .
- b) Installation of Window 2000 Workstation.
- c) Configuration of Window 200 Environment.

- d) Window 2000 Administration.
- e) Application Support.
- f) Remote Access Service .
- g) Configuring TCP/IP network Services.

C) INTRODUCTION TO 2003 (DIFFERENCE BETWEEN WINDOWS2000 & 2003).

6) WEB TECHNOLOGY: -

- a) Installation of Web Server (Microsoft PIS 4.0 Server)
- b) Installation of E-Mail & Internet Services.
- c) Installation of net version software e.g. Office 2000, CAD, Photoshop etc.
- d) Implementing Microsoft W.W.W. (World Wide Web) services (IIS)
- e) Implementing & installing Internet Services
- f) Implementing FTP , SMTP , SNTP ,Security Features for Web server.
- g) Indexing Web sites using Microsoft site Server Express.

7) DIAGNOSTIC: -

Study of network Debugging Tools , E-Mail , Internet , GOPHER ,WWW, FTP services. Debugging in window 2000. Debugging in Network Printer.

GUIDELINES FOR QUESTION PAPER SETTERS - CCN / DCNES – III

	Marks
Q.No.1 A) Fill in the blanks.	(05)
B) Match the following.	(05)
C) Write short answer.(answers should not be more than 2 lines)	(10)
Q.No.2 A) Topic 1.	(08)
B) Topic 4.	(08)
Q.No.3 A) Topic 2.	(08)
B) Topic 6.	(08)
Q.No.4 A) Topic 3.	(16)
Q.No.5 A) Topic 5.	(16)
Q.No.6 A) Topic 7.	(16)

RECOMMENDED BOOKS FOR REFERENCE

4 in 1 Networking

BPB



**INDIRA TECHNICAL INSTITUTE EDUCATION SOCIETY
NASHIK**

**DIPLOMA IN ELECTRONIC ENGINEERING SERVICES
(DEES - ER)**

THEORY PAPER I :	Syllabus for this paper is same as Certificate Course in AUDIO RADIO SERVICING [ARS] Refer this syllabus booklet Page No. _____	100 Marks
THEORY PAPER II :	Syllabus for this paper is printed below Refer this syllabus booklet Page No. _____	100 Marks
PRACTICAL I & II :	Two Separate Practical Each practical Scheme is same as per respective certificate course Practical 100 Marks each – Total 200 Marks.	200 Marks
		Total : (400 marks)



(DEES (ER) - PAPER - II)

[DEES (ER) - II / DETES - II]

THEORY SYLLABUS

1) POWER SUPPLY: -

- a) Series and shunt regulated power supply.
- b) Over voltage and short circuit protection circuits using transistors.
- c) Regulated power supply using LM 723.
- d) Switch Mode Power Supply SMPS.
- e) Introduction to Inverter, UPS, Battery backup.

2) DIGITAL ELECTRONICS: -

- a) Comparisons between analogue and digital electronics.
- b) Different number Systems, Decimal, Binary, Hexadecimal.
- c) Conversion of one No. system to another No. system.
- d) One's / Two's complement No. Addition & subtraction of two Binary No.
- e) Study of different codes: - BCD, ASCII.
- f) Concept of Dynamic logic & D.C. logic.
- g) Logic probe.

3) STUDY OF LOGICAL GATES: -

- a) NOT, OR, NOR, AND, NAND, EX-OR, EX-NOR, Symbol, diagram & Truth TABLE.
- b) Boolean Algebra.
- c) Application's of diff. gates.
- d) DEMORGAN's LAW.

4) FLIP-FLOP: -

- a) S.R. flip-flop, D flip-flop, SR-T flip-flop, J.K. flip-flop, Master and Slave JK flip-flop, Symbol, Truth table & diagram using gate circuit
- b) Timer IC 555, Monostable & Astable multi vibrator using IC 555, Schmitt Trigger.
- c) Half /Full Adder & Subtractor.

5) COUNTER, REGISTERS: -

- a) Binary counter, BCD counter, Mod-n counter, up & down counter, Synchronous counter, Ring counter.
- b) Encoder, Decoder, Multiplexer, De-multiplexer, A/D Converter & D/A Converter

6) OPTO ELECTRONICS, ELECTRONIC DEVICES & ELECTROMECHANICAL DEVICES: -

- a) Principal of Opto electronics, Classification of Optical devices as sensors, emitters etc. (Photo diode, Photo transistor, LASCR, LASCS, LDR)
- b) Opto coupler introduction to Fiber optics.
- c) Construction, symbol and characteristics of UJT, DIAC, SCR ,TRIAC, FET, JFET, & MOSFET Commercial application of above electronics devices.
- d) Introduction to Transducer. Study different types of Transducer. Various application of it.
- e) Introduction of various Automatic switches, SUCH AS SOLENOIDS, relays, Micro switches, Thumb switches.
- f) Types of Motors such as DC motor, AC motor and stepper motor.

7) STUDY INDUSTRIAL APPLICATION (SIMPLE CIRCUIT): -

To study the various Industrial Application which is used for security/safety purpose , such as Fire alarm, Water level indicator, Token No. Indicator, Audio level Indicator, Temperature control, Running light, Light / Sound sensitive switch, LDR Street Light, Emergency Tube light, Battery charger & Timer circuit, etc.

GUIDELINES FOR QUESTION PAPER SETTERS (DEES (ER) – II / DETES –II)

There will be total 6 Compulsory questions. Q 1 is objective question and asks on full syllabus.

		Marks
Q No.1 A)	Fill in the blanks.	(05)
B)	Match the following.	(05)
C)	Write short answer.(answers should not be more than 2 lines)	(10)
Q.No.2	Topic 2.	(16)
Q.No.3	Topic 1 & 3.	(16)
Q.No.4	Topic 4 & 5.	(16)
Q.No.5	Topic 6.	(16)
No Question ask to draw circuit diagram but faults can be ask on given circuit diagram		
Q.No.6	Topic 7.	(16)

PRACTICAL EXAMINATION I FOR : - DEES (ER) – I / DETES – I

Each candidate will have to locate three faults out of which one must be in audio equipments & two faults from radio receiver. Each fault will give 08 marks to locate fault and draw the circuits. 12 marks for write up. The write up indicate the logical method of located faults.

Journal / Term work	20 Marks.
(Journal should contain minimum 50 recommended experiments)	
Oral examination	20 Marks.

PRACTICAL EXAMINATION II FOR : - DEES (ER) – II / DETES – II

Each candidate will have to perform three practical. Ex. No. 1 & 2 - on Topic No. 2, 3 & 4. Ex. No. 3 - on Topic No 5 & 6. Each practical will give 08 marks for diagram and 12 marks for writing procedure.

Journal / Term work	20 Marks.
(Journal should contain minimum 30 recommended experiments)	
Oral examination	20 Marks.

RECOMMENDED BOOKS FOR REFERENCE

Digital electronics practical devices.	Jain & Anand.
Digital principles and application	Malvino & Leach.
Electronic device & applications	G. K. Mithal
Electronic device & applications	Motor Shed
Electronic Project Book	
Electronics For you	
101 Electronics Projects	
IC 555 Projects.	
Simple Projects.	



**INDIRA TECHNICAL INSTITUTE EDUCATION SOCIETY
NASHIK**

**DIPLOMA VIDEO TELEVISION ENGINEERING SERVICES
(DVTES)**

THEORY PAPER I :	Syllabus for this paper is same as Certificate Course in TELEVISION SERVICING [TVS] Refer this syllabus booklet Page No. _____	100 Marks
THEORY PAPER II :	Syllabus for this paper is same as Certificate Course in COLOUR TELEVISION SERVICING [CTVS] Refer this syllabus booklet Page No. _____	100 Marks
THEORY PAPER III :	Syllabus for this paper is printed below	100 Marks
PRACTICAL I & II :	Two Separate Practical Each practical Scheme is same as per respective certificate course Practical 100 Marks each – Total 200 Marks.	200 Marks
		Total : (500 marks)



(DVTES - PAPER - III)

[DVTES – III / DETES - V]

THEORY SYLLABUS

1) TELEPHONE TECHNOLOGY: -

- a) Basic functions of telephone.
- b) Block diagram of digital telephone.
- c) Block diagram of cordless phone.
- d) Introduction of Mobile phones, EPBX.
- e) Introduction to Different section of Telephone (Ringer, Dialer, Keyboard matrix, Voltage dropper, Line IN / Protector ckt. and Speech & sound amplifier.
- f) Caller ID,

2) OPERATIONAL AMPLIFIER: -

- a) DC amplifier
- b) Transistor differential Basic Op-Amp
- c) Op-Amp characteristics & parameters
- d) Application of Operational amplifier:-
 - 1) Inverting amplifier.
 - 2) Non-inverting amplifier.
 - 3) Adder & Subtractor.
 - 4) Voltage follower.
 - 5) Comparator.
 - 6) Integrator & Differentiator.
 - 7) Phase lock loop (PLL)
 - 8) Use in a TV receiver and CD player.

3) CD PLAYER: -

- a) Compact Disk Structure.
- b) Constant linear velocity (CLV) recording system.
- c) Advantage of digital storage.
- d) SMD (Surface mounting devices) Technology
- e) CD Encoding process block diagram.
- f) Block diagram of CD player.
- g) Optional Pickup unit components.
- h) Idea about servo system: -
 - 1) Tracking Servo 2) Carriage Servo 3) Spindle Servo.
- i) Different motors used in CD players & their functions only: -
 - 1) Tray or loading motor (carriage motor) 2) Slide or sled or feed motor.
 - 3) Spindle or Disc or Turn table motor.
- j) Different sensors in CD players.
- k) Different types of Disc.
- l) Various parts of CD Mechanism & their function.
- m) Various functions carried out by system control processor.
- n) Various connectors & cards used in CD/MP3 player.
- o) Up gradation, graphic, equalizer & Digital surround sound.

4) VCD PLAYER: -

- a) Introduction to VCD & DVD.
- b) Comparison between CD ROM / DVD.
- c) Different types of DVD ROM
- d) Home Theater System: -
 - 1) Introduction to Home Theater system 2) Installation of Home Theater.

5) ADVANCED TV TECHNOLOGY SYSTEMS: -

- | | | |
|--------------------|---------------------|------------------|
| Introduction to: - | 1) Video Projectors | 2) Plasma TV |
| | 3) LCD TV | 4) Projection TV |

6) CD/MP3/DVD PLAYER SERVICING: -

- a) Test Equipment and Tools safety precaution.
- b) Adjustment, cleaning, lubricants and maintenance of electrical & mechanical parts.
- c) Troubleshooting: -

01) General Troubleshooting procedure.	02) Troubleshooting due to Power supply.
03) Troubleshooting due to Pickup Unit.	04) Troubleshooting due to Carriage Motor.
05) Troubleshooting due to Feed motor.	06) Troubleshooting due to Spindle motor.
07) Troubleshooting due to Sensors.	08) Troubleshooting due to Tracking servo.
09) Troubleshooting due to Carriage servo.	10) Troubleshooting due to Spindle servo.

7) SATELLITE COMMUNICATION: -

- a) Introduction to Satellite communication & Reception.
- b) Introduction to Dish Antenna, Different parts of Dish Antenna.
- c) LNB Assembly.
- d) Assembly of Dish Antenna (TATA SKY, MEPL, Dishnet etc.).
- e) Alignment of Dish antenna.
- f) Setting of different channels.
- g) Difference between Free & Pay channels.

GUIDELINES FOR QUESTION PAPER SETTERS - DVTES – III / DETES – V

	Marks
Q.No.1 A) Fill in the blanks.	(05)
B) Match the following.	(05)
C) Write short answer.(answers should not be more than 2 lines)	(10)
Q.No.2 A) Topic 1.	(08)
B) Topic 2.	(08)
Q.No.3 A) Topic 3.	(16)
Q.No.4 A) Topic 3.	(08)
B) Topic 5.	(08)
Q.No.5 A) Topic 4.	(16)
Q No.6 No question ask on circuit diagram.	
A) Topic 7.	(08)
B) Topic 6.	(08)

PRACTICAL EXAMINATION - I FOR: - DVTES – I / DETES – III

Practical – I : - 100 Marks – 2 Hours.

Each candidate will have to locate three faults. Each fault will give 8 marks to locate fault and 12 marks for write up. One fault in Power supply or CRT circuit, One fault in Video Tuner, VIF, Sound circuit and One fault in Scanning circuits. The write up indicate the logical method of located faults.

Journal / Term work	20 Marks.
(Journal should contain minimum 50 recommended experiments)	
Oral examination	20 Marks.

PRACTICAL EXAMINATION - II FOR: - DVTES - II / DETES – IV

Practical – II : - 100 Marks – 2 Hours.

Each candidate will have to locate three faults. Each fault will give 8 marks to locate fault and 12 marks for write up. One fault in Power supply or CRT circuit, One fault in Video Tuner, VIF, Sound circuit and One fault in Scanning circuits. The write up indicate the logical method of located faults.

Journal / Term work	20 Marks.
(Journal should contain minimum 50 recommended experiments)	
Oral examination	20 Marks.

RECOMMENDED BOOKS FOR REFERENCE

Operation Amplifier	Botkar
OP-Amp Projects	BPB
Modern CD Player	BPB
Modern Satellite & Cable TV Manual	BPB (Manahar Lotia)



**INDIRA TECHNICAL INSTITUTE EDUCATION SOCIETY
NASHIK
DIPLOMA ELECTRONICS & TELECOMMUNICATION
ENGINEERING SERVICES
(DETES)**

THEORY PAPER I -	Syllabus for this paper is same as Certificate Course in ARS / DEES (ER) - I Refer this Syllabus booklet Page No. _____	100 Marks
THEORY PAPER II -	Syllabus for this paper is same as DEES (ER) - II Refer this Syllabus booklet Page No. _____	100 Marks
THEORY PAPER III -	Syllabus for this paper is same as Certificate Course in TVS / DVTES - I Refer this Syllabus booklet Page No. _____	100 Marks
THEORY PAPER IV -	Syllabus for this paper is same as Certificate Course in CTVS / DVTES - II Refer this Syllabus booklet Page No. _____	100 Marks
THEORY PAPER V -	Syllabus for this paper is same as DVTES - PAPER - III Refer this Syllabus booklet Page No. _____	100 Marks
PRACTICAL - I -	Practical Syllabus for this Practical No. 1 is same as ARS / DEES (ER) – I (Practical – I)	100 Marks
PRACTICAL - II -	Practical Syllabus for this Practical No. 1 is same as DEES (ER) – II (Practical – II)	100 Marks
PRACTICAL - III -	Practical Syllabus for this Practical No. 1 is same as TVS / DVTES –I (Practical – I)	100 Marks
PRACTICAL - IV -	Practical Syllabus for this Practical No. 1 is same as CTVS / DVTES – II (Practical – II)	100 Marks
(Total - 900 Marks)		



**INDIRA TECHNICAL INSTITUTE EDUCATION SOCIETY
NASHIK**

**DIPLOMA COMPUTER HARDWARE ENGINEERING
SERVICES
(DCHES)**

THEORY PAPER I : Syllabus for this paper is same as Certificate Course in
DIGITAL ELECTRONICS & MICROPROCESSOR [DEM] 100 Marks
Refer this syllabus booklet Page No. _____

THEORY PAPER II : Syllabus for this paper is same as Certificate Course in
COMPUTER MAINTENANCE [CM] 100 Marks
Refer this syllabus booklet Page No. _____

PRACTICAL I & II : Practical Syllabus for this Practical No. 1 is same as 100 Marks
DEM
Practical Syllabus for this Practical No. 2 is same as 100 Marks
CM

Total : (400 marks)



**INDIRA TECHNICAL INSTITUTE EDUCATION SOCIETY
NASHIK
DIPLOMA COMPUTER NETWORKING ENGINEERING
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(DCNES)**

THEORY PAPER I :	Syllabus for this paper is same as Certificate Course in DIGITAL ELECTRONICS & MICROPROCESSOR [DEM] Refer this syllabus booklet Page No. _____	100 Marks
THEORY PAPER II :	Syllabus for this paper is same as Certificate Course in COMPUTER MAINTENANCE [CM] Refer this syllabus booklet Page No. _____	100 Marks
THEORY PAPER III :	Syllabus for this paper is same as Certificate Course in COMPUTER NETWORKING [CCN] Refer this syllabus booklet Page No. _____	100 Marks
PRACTICAL I & II :	Practical Syllabus for this Practical No. 1 is same as DEM	100 Marks
	Practical Syllabus for this Practical No. 2 is same as CM	100 Marks

Total : (500 marks)

