

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 B/W 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 / DVTES - 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.

- | | 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.	(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

