(ii)TRADE : ELECTRONICS

12th VOCATIONAL

PAPER-I **DIGITAL ELECTRONICS AND COMMUNICATION**

THEORY

Time : 2 hrs

Theory : 30 Marks
InA : 10 Marks
Practical : 50 Marks
Total : 90Marks

Digital Electronics

Digital and Analog Signal, Advantages of Digital System, Decimal Number System, Binary Number System, Logic Gates, OR Gate, AND Gate, NOT Gate, NAND Gate, NOR Gate, Introduction to IC, Types of IC- Analog & Digital, Advantages, Limitation, Application of IC.

TV Transmission and Pulse Circuits

Basic Concept of TV Transmission system, Block Diagram of TV Transmitter

Camera Scanning, Types of Scanning, Standards and Synchronization, Composite Video Signal, Photo Electric Effect, Camera Tube, Types of Camera Tubes.

TV Reception

Block Diagram of Monochrome TV Receiver, Block Diagram of Color TV Receiver, Working Principles of all Stages of Monochrome TV and color TV Receiver- Tuner Section, Detector, Sound Section, Sync. Section, Deflection circuit, AGC,AFC, EHT, Picture Tube and Power Supply, Fault Analysis, Test & Alignment of monochrome and Color TV Receiver, Adjustment Of Centering, Height, Width, Linearity, Pincushion, Convergence, Color Sensitivity, Deflection circuit, Focus etc.Alignment of Video IF, Tuner, AGC, AFC.

Transmitting Media

Introduction of Satellite system, Optical Fiber System and RADAR System.Explain Block Diagram of Satellite system and Optical Fiber System.Advantages of Optical Fiber.

Mobile and Wireless Communication

Basic of Cordless Phone, Introduction to Mobile Communication, Define GSM, CDMA, Dish Antenna, Yaggi Antenna, Impact of Mobile Phone on-Family, Health and Society, Precautions while using Mobiles.

DIGITAL ELECTRONICS AND COMMUNICATION

Time : 3 hrs **PRACTICAL** **Marks : 50**

- Logic Gate With Truth Tables- OR Gate, AND Gate, NOT Gate, NOR Gate, NAND Gate.

- Demonstration of LED Seven Segment Display.
- Study of TV Transmitter System.
- Study of Monochrome TV Receiver.
- Voltage Measurement in various stages of Monochrome TV Receiver.
- Alignment of RF, IF, SIF sections of Monochrome TV.
- Testing of Power Supply Section in Monochrome TV Receiver.
- Draw and Explain Composite Video Signal.
- Study of Block diagram of satellite.
- 10.Study of Block Diagram of Optical Fiber System.
- 11.Testing of EHT.
- 12.Assembly, Installation and Testing of Yaggi Antenna.
- 13.Assembly, Installation and Testing of Dish Antenna.

TRADE : ELECTRONICS

12th VOCATIONAL

PAPER-II **TEST AND MEASURING INSTRUMENTS**

THEORY

Time : 2 hrs

Theory : 30 Marks
InA : 10 Marks
Practical : 50 Marks
Total : 90Marks

Testing Instruments

Analog Multimeter, Front Panel of Analog Multimeter, Digital Multimeter, Front Panel of Digital Multimeter, Measurement of AC/DC Voltage, Current and different values of Resistance with Multimeter, Testing of - Resistor, Capacitor, Diode, Transistor, SCR and FET, Energy Meter, Watt Meter.

C.R.O (Cathode Ray Oscilloscope)

Cathode Ray Oscilloscope, Front Panel of CRO, Block Diagram Of CRO, CRT, Measurement of Voltage, Current, Frequency using CRO,Lissajous Figure on CRO.

Signal Generator

Signal Generator, Types Of Signal Generator-AF Signal Generator, RF Signal Generator, Block Diagram, Operation Control, Uses and Applications of- AF/RF Signal Generator, Block Diagram, Operation Control, Uses and Applications of Pattern Generator, Color Bar Generator, Sweep Generator, Wobbuloscope.

Transducer

Transducer, Types of Transducer-Passive Transducer, Active Transducer, Working Principle of Resistance Temperature Detector (R.T.D), Thermocouple, Thirmistor and LVDT.

Power Supply

Diagram, Working Principle and application of SMPS, Inverter and UPS, Types Of UPS-ON Line UPS, OFF Line UPS.

Repair and Maintenance

Job Card, Service Card, History Sheet, Stock Keeping, Test Bench, Field Servicing, Job Scheduling.

TEST AND MEASURING INSTRUMENTS

Time : 3 hrs **PRACTICAL** **Marks : 50**

- Study the Front Panel Control of Multimeter.
- Testing of Resistor, Capacitor Using Multimeter.
- Measurement of AC/DC Voltage and Current Using Multimeter.
- Study the Front Panel Control of CRO.
- Measurement of AC/DC Voltage, AC/DC Current, Frequency and Time Period using CRO.
- Measurement of AC/DC Voltage, AC/DC Current, Frequency and Time Period using CRO.

- Measurement of Frequency and Time Period using CRO.
- Study the Lissajous Figure on CRO.
- Demonstration and use of AF/RF Signal Generator.
- 10.Demonstration and use of Pattern Generator.
- 11.Demonstration and use of Wobbuloscope.
- 12.Demonstration of composite video-signal on a CRO.
- 13.Study the RTD and Thermocouple.
- 14.Study the LVDT.

TRADE :ELECTRONICS

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PAPER-III **ELECTRONICS DEVICES AND CIRCUITS**

THEORY

Time : 2 hrs

Theory : 30 Marks
InA : 10 Marks
Practical : 50 Marks
Total : 90Marks

Multistage Amplifier

Multistage Transistor Amplifier, R-C Coupled Amplifier, Transformer Coupled Amplifier, Direct Coupled Amplifier, Operational Amplifier, Comparison of Different types of Multistage Amplifier.

Power Amplifier

Introduction, Difference between Voltage and Power Amplifier, Classification of Power Amplifier—Class-A Amplifier, Class-B Amplifier, Class-C Amplifier, Class-AB Amplifier, Push-Pull Amplifier, Introduction of Heat Sink.

Oscillator

Transistor Oscillator, Types of Transistor Oscillators- Tuned Collector Oscillator, Hartely Oscillator, Colpitt's Oscillator, Phase Shift Oscillator, Wein Bridge Oscillator, Crystal Oscillator.

Wave Shaping Circuits

Different types of Wave Shapes, Multi vibrator ,Astable Multi vibrator, Mono stable Multi vibrator, Bi-Stable Multi vibrator, Differentiating Circuit, Integrating Circuit, Clipping Circuit- Positive Clipper, Negative Clipper, Biased Clipper, Combination Clipper, Clamping Circuit- Positive Clamper, Negative Clamper.

Power Electronics

Field Effect Transistor (FET), Silicon Controlled Rectifier (SCR), TRIAC, DIAC.

Consumer Electronics

Microphone, Loudspeaker, Microwave Oven, Photo state Machine, LCD, LED.

ELECTRONICS DEVICES AND CIRCUITS

Time : 3 hrs **PRACTICAL** **Marks : 50**

- Study of R-C Coupled Amplifier.
- Study of Transformer Coupled Amplifier.
- Study of Operational Amplifier.
- Study of Hartley Oscillator.
- Study of Colpitt's Oscillator.
- 6.Study of Wein Bridge Oscillator.
- Study of Crystal Oscillator.
- Study of Differentiating Circuit.
- Study of Integrating Circuit.
- 10.Study of Multi vibrator circuit.
- 11.Study the V-I Characteristics of an SCR.
- 12.Study of Clipping Circuits.
- 13.Study of Clamping Circuits.
- 14.Study of Microphone.
- Study of Speaker.
- Study of Photo state Machine.