

**Syllabus for the post of Instructor (Electronic)**  
**Examination under Labour, Employment, Skill**  
**Development & Entrepreneurship Department, 2018**

1. General English (*Essay Type & MCQ*) ..... 100 Marks
2. Technical Paper – I (*MCQ*)..... 150 Marks
3. Technical Paper – II (*MCQ*)..... 130 Marks
- Aptitude Test (*MCQ*) ..... 20 Marks

**GENERAL ENGLISH (100 marks)**

- (a) Essay Writing (Conventional) .....20 Marks
- (b) Idioms & Phrases (MCQ) .....16 Marks
- (c) Comprehension of given passages (MCQ).....12 Marks
- (d) Grammar (MCQ) .....20 Marks  
Parts of Speech: Nouns, Adjective, Verb, Adverb, Preposition, etc.
- (e) Composition (MCQ) .....16 Marks
  - i)Analysis of complex and compound sentences
  - ii)Transformation of sentences
  - iii)Synthesis of sentences
- (f) Correct usage and vocabularies (MCQ) .....16 Marks

## **Technical Paper – I (150 Marks)** **(MCQ)**

1. **Trade Introduction, hand Tools and Electrical Safety :**  
Safety precaution; First Aid; Artificial Respiration; Fire Extinguishing;  
Safety symbols
  
2. **Basic Electrical :**  
Electric Charges, Electric current, E.M.F and potential differences;  
Resistance; Basic Electrical terms; Basics of AC and DC; Phase; Conductors,  
insulators and semi-conductors; Ohm's Law; Electric symbols.
  
3. **Electric Cables :**  
Wires and Cables; Management of wires; Types of wires;
  
4. **Batteries :**  
Introduction; dry Cell; Lead acid Cell; Grouping of cells; battery Charging;  
Charged and discharged conditions of a battery; maintenance of batteries;  
Efficiency of a battery
  
5. **Passives Components :**  
Passive components; Kirchoff's Voltage Law and Kirchoff's Current Law;  
Resistors; Inductors; Capacitors.
  
6. **Magnetism And Electromagnetism :**  
Properties of a magnet, Types of magnet; Preparation of artificial  
magnet; Electromagnetism; Electric bell; Relay; Types of relays.
  
7. **Transformer :**  
Working principle of transformer; Power construction transformer;  
Classification of transformers; Types of cores used in transformers; Step-up  
and step-down transformer
  
8. **Measuring Instruments :**  
PMMC Type; Analog Multimeter; DVM; DMM.
  
9. **Soldering and Desoldering :**  
Soldering Iron; Electric Soldering Iron; Soldering Gun; Soldering Station.
  
10. **Junction Diodes and Rectifiers :**

Transistor and Diode Numbering, Identification Numbers of Semi Conductor Devices, Semi-Conductors, 'P' and 'N' Type Materials, P-N Junction, Forward and Reverse Biasing, Diode's Specification, Zener Diode, Varactor Diode, Tunnel Diode, Half-Wave Rectifier, Bridge Rectifier, Battery Eliminator, Filter Circuits According to Work.

**11. Regulated Power Supplies :**

Introduction, Voltage Regulation, Zener Diode Voltage, Regulator, Transistorised Regulated Power Supply, Regulated Power Supply 78xx and 79xx IC's, IC LM 317/LM337, IC 723.

**12. Computer Hardware and Networking :**

Induction, Hardware, Motherboard, BUS, Input/Output Devices, Keyboard, Mouse, Monitor, HDD, PEN Drive, CD and DVD, CDD and DVDD.

**13. Computer OS :**

Introduction, Windows O.S, Files, Folder, Saving a File, Copying a File, Deleting a File, BIOS or Booting, Ports, Internet.

**14. Operating Windows and MS Office :**

Introduction, Components of Desktop, MS Word, Power Point.

**15. Transistors :**

Transistor, Construction of Transistor, Working of PNP Transistor, Working of a NPN Transistor, Transistor biasing, Transistor as a Switch, Transistor as Amplifier.

**16. Amplifiers :**

Introduction, Classification of Amplifiers, Amplifiers Classified on The Basis of Frequency, Amplifier Classified on the Basis of Mode of Operation, Amplifiers Classified on The Basis of Coupling Methods, Transistor Biasing Circuits.

**17. Oscillators :**

Types of Oscillators, Multivibrator, Wein Bridge Oscillator.

**18. Power Electronic Components-I :**

Introduction, FET, SCR, TRIAC, DIAC.

**19. Power Electronic Components-II :**

Introduction, FET, Mosfet.

- 20. Opto Electronics Components :**  
LED, LDR, Optical Sensor, Opto-Couplers.
- 21. Digital Electronics :**  
Introduction, Logic Levels, Introduction to Digital Electronics, Basic Logic Gates, Logic Families
- 22. Combinational Logic Circuits :**  
Introduction, Encoder and Decoder, Multiplexer.
- 23. Flip-Flops and Counters :**  
SR Latch or SR Flip-Flop
- 24. Segment Display, Registers and Memory :**  
7-Segment Display; ROM; RAM.
- 25. Operational Amplifiers :**  
Introduction, Applications of Operational Amplifier.
- 26. Timer Circuits :**  
Introduction, IC 555

## **Technical Paper – II (150 Marks) (MCQ)**

- 1. CRO :**  
Introduction, CRT, Deflection, System Used in CROs.
- 2. Protection Devices :**  
Introduction, Fuse Rating, Fuse, MCB, ELCB, Contractor, Electromagnetic Relay.
- 3. Electrical Motors :**  
DC Motor; Fundamental Requirements of a DC Motor; AC Motors; Specification of AC Motors; Single Phase Motor; Starting of a 3-phase Motor, induction Motors; Overhead Relay.
- 4. Electronic Cables and Connectors :**  
Introduction, Types of Electronic Cable.
- 5. Radio Wave Propagation and Antennas :**  
Introduction, Types of Radio Wave Propagation, Principle of Radiation, various Antenna, Transmission Lines.
- 6. Modulation and Detection :**  
Introduction, Types of Modulation Percent of Modulation, Side Band, Am Diode Detector, AVC or AGC, FM Detector Circuit.
- 7. Radio Receivers and Transmitters :**  
Fundamental Principles of Receivers, Super Heterodyne Receiver, Limiter, Image Frequency, Selection of IF, Tuning Ratio, IF and RF Alignment in Radio Receivers, Fault Finding in Radio Receivers.
- 8. Digital and Satellite Communication :**  
Introduction, PWM Signals, Satellite Communication System, Radar, I.L.S.
- 9. Microprocessors and Microcontrollers :**  
Introduction, LSI and VLSI, Microprocessor 8085, Pin out of Microcounter 8051, Memories used with Microcontroller 8051.
- 10. Sensors, Transducers and Applications :**

Introduction to Sensor, RTD (Resistance Temperature Detector), PT 100 Sensor, LDR (Light Dependent Resistor), LVDT (Linear Variable Differential Transformed).

**11. Fibre-Optic Communications :**

Introduction, Fibre-optic Cable.

**12. Digital Panel Meter :**

Introduction, 7-Segment Display, Decoder/Driver IC, Multiplexer, Decoder/Driver IC Used with LCD.

**13. SMPS :**

Introduction, Automatic Voltage Stabilizer, Servo Voltage Stabilizer, SMPS.

**14. UPS :**

Introduction; Difference Between Inverter and UPS; PCB for SMD Components.

**15. Solar Power :**

Introduction, Need of Renewable Energy Source, Warming, Solar Radiation, Solar Photo Voltaics

**16. Cell Phones :**

Introduction, Cell Phone System

**17. LED Lights :**

Introduction, LED (Light Emitting Diode), LED Light Panel.

**18. LCD and LED TV Receivers :**

Introduction, Extra High Tension Supply, Colour TV Systems, TV Remote Control, LCD TV, LED TV, Fault Finding in TV Receiver.

**19. PA System :**

Audio Fundamentals, Acoustics, Decible, B.H Curve, PA System, Pre-Amplifier, Micorphones, Loudspeaker, Stereo PA Amplifier.

**20. VCD/DVD Player :**

Tape Recorder, CD or Compact Disc, VCD Player, DVD Player.

## **21. Aptitude Test (20 Marks)**

- **Numerical And Figurework Tests: (4 Marks)**

These tests are reflections of fluency with numbers and calculations. It shows how easily a person can think with numbers. The subject will be given a series of numbers. His/Her task is to see how the numbers go together to form a relationship with each other. He/She has to choose a number which would go next in the series.

- **Verbal Analysis And Vocabulary Tests: (6 Marks)**

These tests measure the degree of comfort and fluency with the English language. These tests will measure how a person will reason with words. The subject will be given questions with alternative answers, that will reflect his/her command of the rule and use of English language.

- **Visual And Spatial/3-D Ability Tests: (4 Marks)**

These tests are used to measure perceptual speed and acuity. The subject will be shown pictures where he/she is asked to identify the odd one out; or which comes next in the sequence or explores how easily he/she can see and turn around objects in space.

- **Abstract Reasoning Tests: (6 Marks)**

This test measures the ability to analyse information and solve problems on a complex, thought based level. It measures a person's ability to quickly identify patterns, logical rules and trends in new data, integrate this information, and apply it to solve problems.