

SYLLABUS · TECHNICAL & TRADE · WASSCE 2026

Radio, TV and Electronics syllabus

Every examinable topic area in WAEC Radio, TV and Electronics, in one place — with how the papers are structured and answers to common questions. Compiled by waeccbt.com; not an official WAEC document.

How the papers work: Three papers, all compulsory; Papers 1 and 2 form a composite paper taken at one sitting. Paper 1: 40 multiple-choice objective questions, 45 minutes, 40 marks. Paper 2: six short-structured questions of which candidates answer any four, 1 hour, 60 marks. Paper 3: a 2-hour practical test of three skill-based questions of which candidates answer two, 90 marks; the materials list reaches schools at least two weeks before. Alternative to Practical: two compulsory questions in 2 hours for 100 marks if materials cannot be obtained. Industrial attachment during the long vacation between SS2 and SS3, supervised and assessed by the subject teacher, carries 10 marks. This bank practises Paper 1 and the knowledge behind Papers 2 and 3.

1. Workshop safety rules and regulations

- Concept of safety; sources and prevention of hazards: electric shock, wet floors, wrong handling of tools, improper dressing, horseplay
- Safety checks in servicing radio receivers: preparation of work area, capacitor discharge, working on live circuits, handling tools
- Safety in the television workshop: power supplies, picture tube, high-voltage section, component ratings

2. Basic electricity

- Structure of matter; atomic structure; conductors, insulators and semiconductors
- Current, voltage and resistance: definitions, units, symbols; laws of attraction and repulsion
- Electronic components: resistors, capacitors, inductors, diodes, transformers, transistors, ICs; graphical symbols, values, ratings
- Resistor and capacitor colour codes; measured versus coded values; testing capacitors
- Kirchhoff's current and voltage laws; Ohm's law; resistors in series and parallel
- Diodes and transistors: types, symbols, testing, CC/CE/CB configurations
- Battery: primary and secondary cells, symbols, testing, wet and dry cells
- Electric power; direct and alternating current; a.c. waveform: r.m.s., peak, average, frequency, period

3. Electronic tools and instruments

- Hand tools: screwdrivers, diagonal cutters, soldering gun and iron, desoldering tools, pocket knife, stripper, solder wick
- Measuring instruments: voltmeter, ammeter, ohmmeter, multimeter; measuring V, I and R; testing semiconductors; faulty meters
- Fault-finding equipment: oscilloscope, signal tracer, digital frequency counter, logic probe, TV analyser

4. Electronic devices and circuits

- Meaning of electronics and electronic circuit
- Emission: thermionic, photoelectric, field and secondary; photoelectric devices
- Semiconductor theory; semiconductor diodes: rectification, characteristics, applications
- Power supply unit: rectification, filters, stabilised low-voltage d.c. supply
- Amplifiers: Class A, B, C and AB; RLC circuits
- Feedback: types, effects on gain, bandwidth, noise and distortion
- Oscillators: principle and types; multivibrators: astable, bistable, monostable

5. Electronic communication systems

- Communication systems: block diagram, stages, noise
- Electromagnetic spectrum; radio wave propagation; bands VLF to EHF
- Transducers: loudspeaker, microphone, video camera, CRT and LCD displays
- Modulation and demodulation: AM and FM waveforms, modulation index and factor, carrier wave
- Radio transmitter and receiver: TRF and superheterodyne; selectivity and sensitivity; tuner
- Resonant circuits: series and parallel resonance, bandwidth, resonant frequency formula
- Satellite communication: elements, transmission, reception, antenna
- Television transmitter and receiver: scanning, video signal, FM sound detection, monochrome and colour receivers, PAL/SECAM/NTSC, primary colours, colour signal components

6. Workshop practice and maintenance

- Soldering and desoldering: techniques, precautions, solder and flux types
- Electronic repairs: dismantling and reassembling power supply, RF, IF, detector and AF stages; car radio installation
- Fault finding in radio receivers: logical troubleshooting, alignment of RF and IF stages
- Use of the multimeter on active and passive components
- Diagnosis and repair of black-and-white and colour TV receivers: service manuals, symptoms, convergence, colour bar generator

7. Entrepreneurship in radio, television and electronics

- Business management and finance: accounting, cost-benefit analysis, purchasing, records (ledger, repair order, inventory), sources of capital
- Customer relations: appearance, customer psychology, working relations, telephone courtesy
- Business opportunities: satellite installation, electronics specialist, consultant, technician, sales and service, antenna and TV installation

Frequently asked questions

How is WAEC Radio, Television and Electronics Works examined?

Three compulsory papers plus industrial attachment. Paper 1 has 40 objective questions in 45 minutes (40 marks); Paper 2 has six short-structured questions of which you answer four in 1 hour (60 marks); Paper 3 is a 2-hour practical with three skill-based questions of which you answer two (90 marks). Industrial attachment assessed by your teacher carries 10 marks.

What if there are no materials for the practical?

The Council may set an Alternative to Practical paper of two compulsory questions answered in 2 hours for 100 marks, testing the practical skills theoretically.

When is the industrial attachment done?

During the long vacation between SS2 and SS3. It is supervised and assessed by your subject teacher and carries 10 marks.

What calculations should I expect?

Ohm's law, electric power, series and parallel resistors, Kirchhoff's laws, r.m.s./peak/average values, frequency and period, resonant frequency, bandwidth, modulation index and percentage, and reading resistor colour codes.

Which instruments must I be able to use?

The multimeter (voltmeter, ammeter and ohmmeter) for measuring V, I and R and testing diodes, transistors and capacitors, plus fault-finding equipment such as the oscilloscope, signal tracer, frequency counter, logic probe and TV analyser.

Which television systems are examined?

Monochrome and colour receivers, scanning, video and sound signals, primary colours and the PAL, SECAM and NTSC colour standards, as well as satellite communication and antenna installation.

Is business part of the subject?

Yes: accounting practices, cost-benefit analysis, business records, sources of capital, customer relations and the business opportunities open to radio, TV and electronics technicians.

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