

Walchand College of Arts and Science (Autonomous), Solapur
W.H.Marg, Ashok Chowk, Solapur

**Broad Syllabus: For Recruitment Examination of Assistant Professor
in Electronics**

I. Semiconductor Physics and Devices

Semiconductor physics; junction and field-effect devices; advanced semiconductor and optoelectronic devices; emerging materials.

II. IC Fabrication and VLSI

Integrated-circuit fabrication; thin-film technology and characterization; MOS/CMOS technology; VLSI design and layout.

III. Circuit Theory and Signal Processing

Network theory and circuit analysis; transform methods and system response; signals and sampling; digital signal processing.

IV. Analog Electronics

Power supplies and transistor biasing; amplifiers and feedback; oscillators and waveform generation; operational amplifiers and linear IC applications.

V. Digital Electronics

Digital logic and Boolean algebra; combinational and sequential circuits; data conversion and digital interfacing; programmable logic and HDL-based design.

VI. Microprocessors and Microcontrollers

Microprocessor architecture and programming; microcontroller architecture and instruction systems; embedded programming; peripheral interfacing and communication.

VII. Electromagnetics and Microwave Engineering

Electromagnetic field theory and wave propagation; transmission lines and waveguides; antenna theory; microwave devices and radar.

VIII. Communication Systems

Analog and digital communication; noise and information theory; multiplexing and multiple access; data, mobile, satellite, and optical communication; IoT communication.

IX. Power Electronics and Control Systems

Power semiconductor devices and protection; power conversion and motor control; SMPS and UPS; control-system analysis, stability, and controllers.

X. Instrumentation and Sensors

Transducers and measurement principles; measurement of physical quantities; electronic measuring instruments; biomedical instrumentation; MEMS and IoT sensors.