



SNS COLLEGE OF TECHNOLOGY
(An Autonomous Institution)
Coimbatore-35



DEPARTMENT OF BIOMEDICAL ENGINEERING

19BMB303 & Fundamentals of Microprocessors and Microcontrollers

UNIT II – ADC INTERFACING **III Year/ VI Sem**

Dr. K. Manoharan,
ASP / BME / SNSCT



ADC



Introduction to ADC

- An Analog-to-Digital Converter (ADC) is a device that converts an analog voltage signal into a digital representation that can be processed by a microprocessor like the **Intel 8085**.

ADC Interfacing with 8085

- Since the **8085 microprocessor** is an 8-bit digital system, it cannot directly process analog signals. Therefore, an **ADC (e.g., ADC0808 or ADC0809)** is used to convert analog input to an 8-bit digital output that the microprocessor can read.



ADC Interface



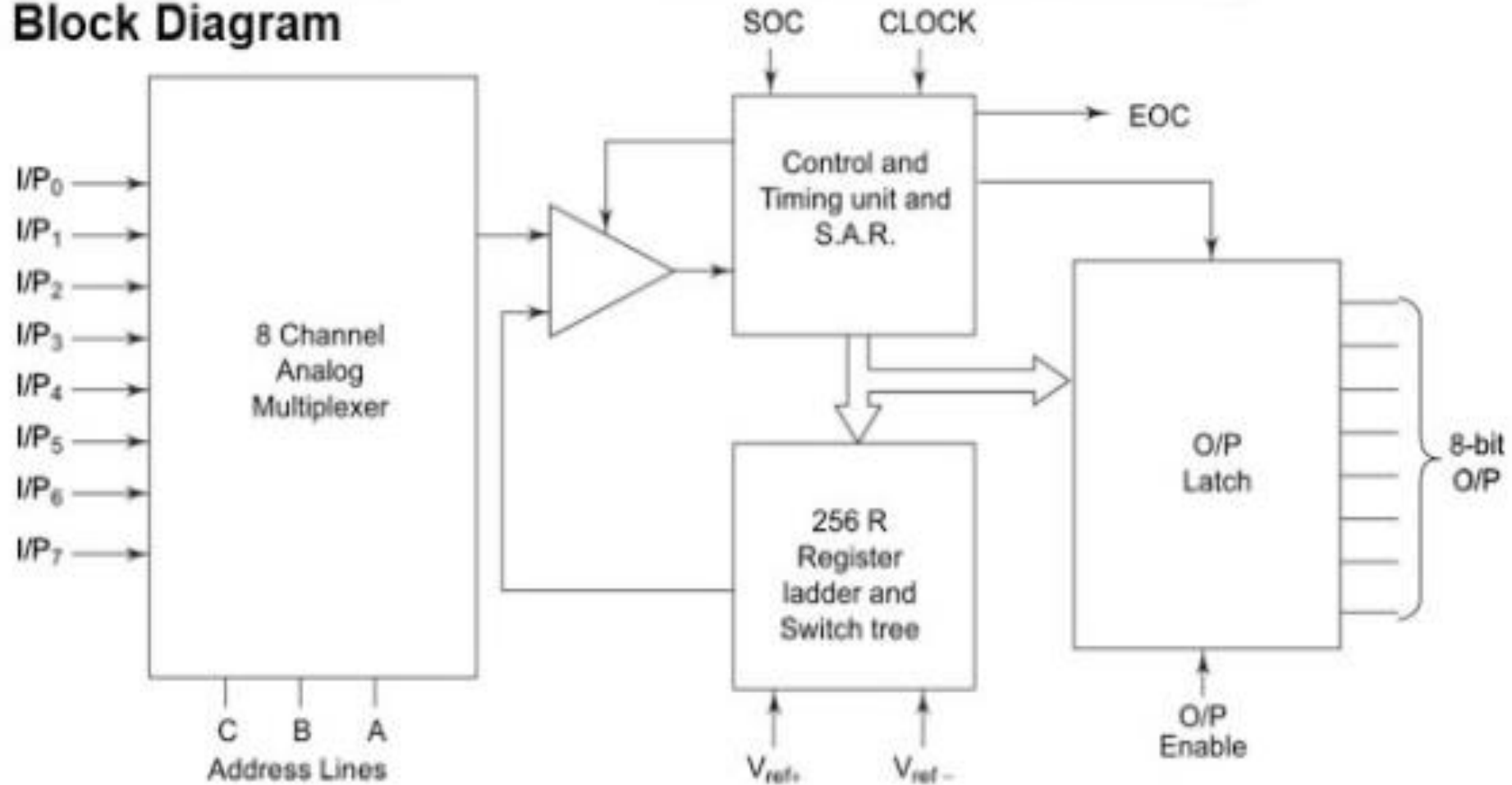
General algorithm for ADC interfacing contains the following steps:

- Ensure the stability of analog input, applied to the ADC.
- Issue start of conversion pulse to ADC
- Read end of conversion signal to mark the end of conversion processes.
- Read digital data output of the ADC as equivalent digital output.



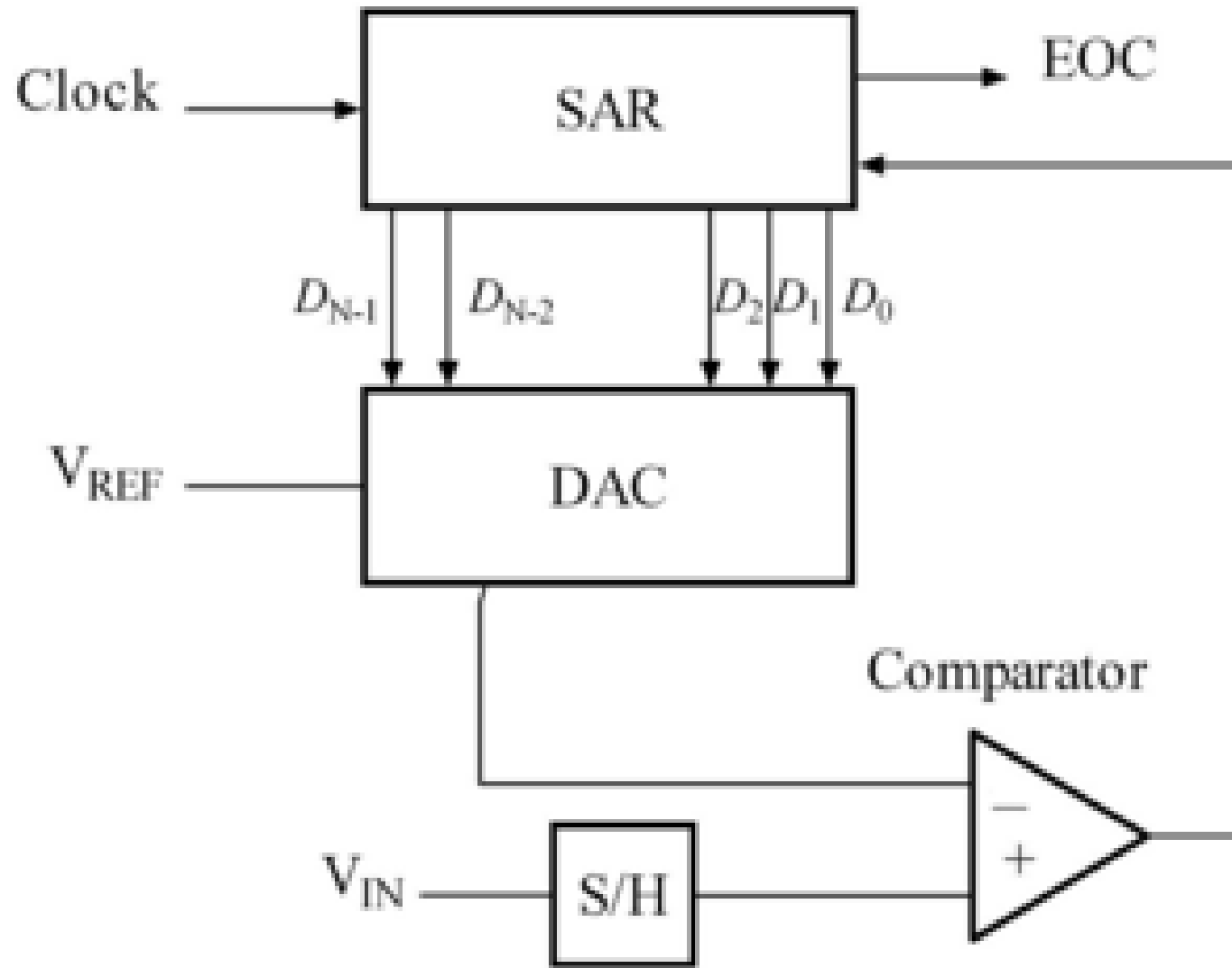
ADC

Block Diagram



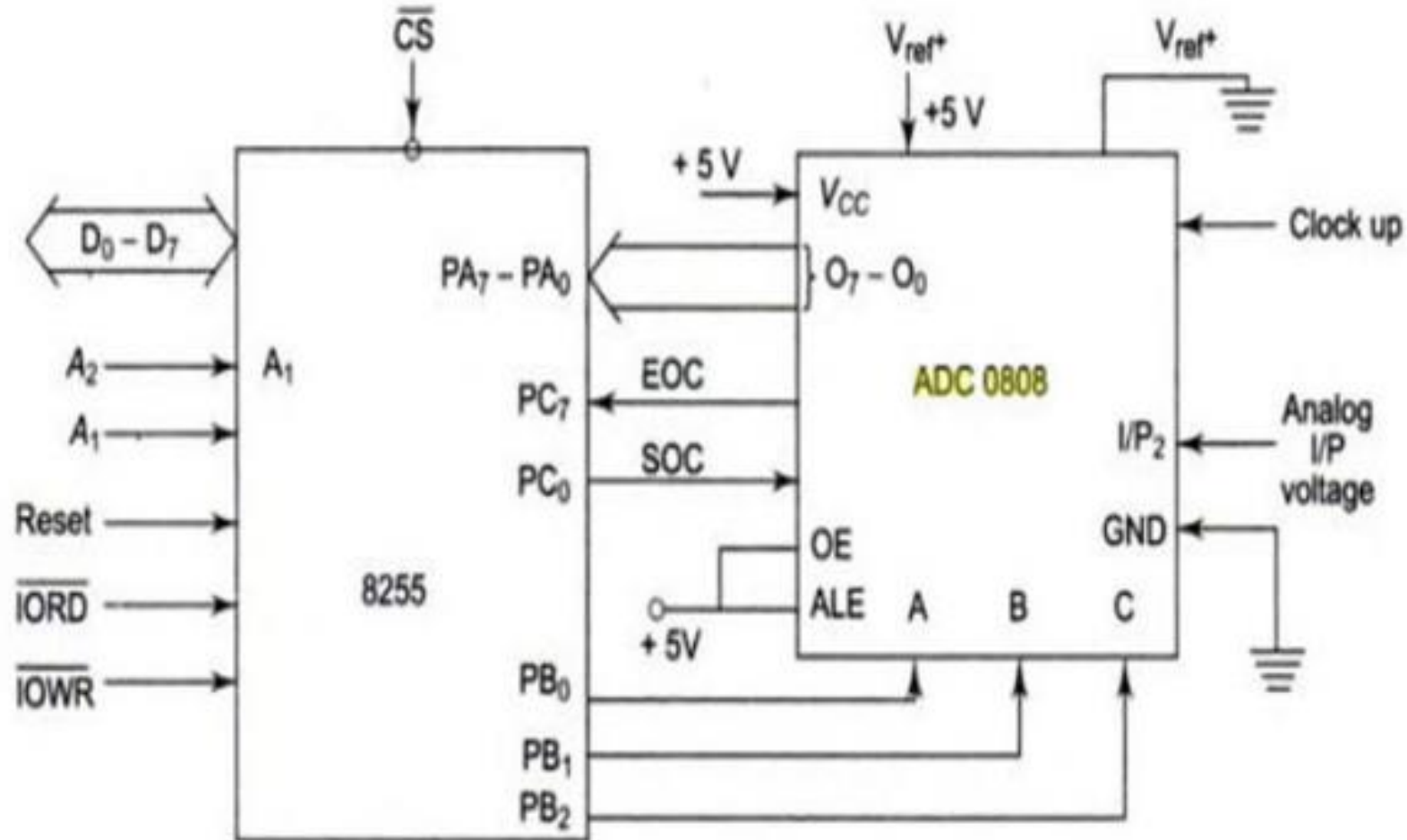


- ✓ **Analog Inputs (IN0-IN7)** – 8 input channels
- ✓ **Address Lines (A, B, C)** – Select input channel
- ✓ **Control Pins**
 - ✓ **ALE (Address Latch Enable)** – Latches input channel selection
 - ✓ **SOC (Start of Conversion)** – Starts ADC conversion
 - ✓ **EOC (End of Conversion)** – Signals conversion completion
 - ✓ **OE (Output Enable)** – Enables digital output
- ✓ **Clock** – External clock signal
- ✓ **Digital Output (D0-D7)** – 8-bit digital output
- ✓ **VCC & GND** – Power supply





ADC Interfacing diagram





Steps for ADC Interfacing

1. **Select the input channel** using Address lines (A, B, C).
2. **Enable Address Latch (ALE)** to latch the channel selection.
3. **Start Conversion (SOC)** by setting it high and then low.
4. **Wait for End of Conversion (EOC)** to go high.
5. **Enable Output (OE)** and read the digital output data from D0-D7.
6. **Process the digital data in 8085 as required.**



Applications of ADC in 8085



- **Temperature Measurement** using sensors
- **Voltage Monitoring** in industrial applications
- **Biomedical Signal Processing** (ECG, EEG, etc.)
- **Embedded Systems & Automation**