

1. Which of the following is an advantage of digital instruments over analog instruments?

- a) Higher cost
- b) Limited accuracy
- c) Susceptible to noise
- d) Ease of interfacing with digital systems

Answer: d) Ease of interfacing with digital systems

Explanation: Digital instruments can easily communicate with other digital devices, making them suitable for integration into digital systems and automation.

2. What type of DAC uses a network of resistors to perform digital-to-analog conversion?

- a) Variable resistive type
- b) Binary ladder
- c) Weighted converter using Op-amp and transistor
- d) Dual Slope Integrating Type

Answer: a) Variable resistive type

Explanation: Variable resistive type DAC uses a network of resistors whose values can be varied to produce different analog output voltages corresponding to digital inputs.

3. Which DAC architecture employs a ladder network of resistors in a binary-weighted fashion?

- a) R-2R ladder Type

- b) Binary ladder
- c) Weighted converter using Op-amp and transistor
- d) Ramp Technique

Answer: a) R-2R ladder Type

Explanation: R-2R ladder Type DAC utilizes a ladder network of resistors with a specific binary-weighted pattern to generate analog voltages.

4. In ADC, which technique involves charging a capacitor for a fixed period and measuring the voltage across it?

- a) Ramp Technique
- b) Integrating Type (voltage to frequency)
- c) Successive Approximations
- d) Dual Slope Integrating Type

Answer: d) Dual Slope Integrating Type

Explanation: In the Dual Slope Integrating Type ADC, a capacitor is charged for a fixed time interval, then discharged at a constant rate while measuring the voltage across it to determine the digital output.

5. What is the primary advantage of digital voltmeters compared to analog voltmeters?

- a) Higher sensitivity
- b) Lower resolution
- c) Susceptibility to environmental factors

d) Accuracy and precision

Answer: d) Accuracy and precision

Explanation: Digital voltmeters offer higher accuracy and precision compared to analog voltmeters, making them more reliable for precise measurements.

6. Which parameter determines the finest increment of measurement in a digital multi-meter?

- a) Accuracy
- b) Sensitivity
- c) Resolution
- d) Precision

Answer: c) Resolution

Explanation: Resolution in a digital multi-meter refers to the smallest increment of measurement it can display, determining the level of detail in the measurements.

7. Which ADC technique involves comparing the input voltage with a known reference voltage and iteratively adjusting the digital output until the two voltages match?

- a) Ramp Technique
- b) Integrating Type (voltage to frequency)
- c) Successive Approximations
- d) Dual Slope Integrating Type

Answer: c) Successive Approximations

Explanation: Successive Approximations ADC compares the input voltage with a known reference voltage and iteratively refines the digital output to converge towards the input voltage.

8. Which DAC architecture utilizes the principle of weighted summing amplifiers to generate the analog output?

- a) R-2R ladder Type
- b) Binary ladder
- c) Weighted converter using Op-amp and transistor
- d) Practical DAC

Answer: c) Weighted converter using Op-amp and transistor

Explanation: Weighted converter using Op-amp and transistor DAC architecture utilizes weighted summing amplifiers to produce the analog output voltage.

9. What is the purpose of a ramp generator in the Ramp Technique ADC?

- a) To generate a reference voltage
- b) To produce a linearly increasing voltage
- c) To control the switching of analog switches
- d) To provide power to the Op-amp

Answer: b) To produce a linearly increasing voltage

Explanation: In the Ramp Technique ADC, the ramp generator generates a voltage that linearly increases with time, which is compared with the input voltage to determine the digital output.

10. Which type of DAC offers improved linearity and reduced complexity compared to other architectures?

- a) Binary ladder
- b) Weighted converter using Op-amp and transistor
- c) R-2R ladder Type
- d) Practical DAC

Answer: c) R-2R ladder Type

Explanation: R-2R ladder Type DAC provides improved linearity and reduced complexity compared to other DAC architectures, making it commonly used in many applications.

11. In ADC, which technique involves measuring the time taken for a voltage ramp to reach a certain level?

- a) Dual Slope Integrating Type
- b) Ramp Technique
- c) Integrating Type (voltage to frequency)
- d) Successive Approximations

Answer: a) Dual Slope Integrating Type

Explanation: In the Dual Slope Integrating Type ADC, the time taken for a voltage ramp to

reach a certain level is measured to determine the input voltage.

12. Which parameter of a digital multi-meter refers to its ability to detect small changes in input voltage?

- a) Accuracy
- b) Sensitivity
- c) Resolution
- d) Precision

Answer: b) Sensitivity

Explanation: Sensitivity in a digital multi-meter refers to its ability to detect small changes in input voltage, indicating its responsiveness to subtle variations.

13. What is the primary advantage of a practical DAC over other types?

- a) Higher cost
- b) Lower complexity
- c) Reduced linearity
- d) Limited resolution

Answer: b) Lower complexity

Explanation: Practical DACs offer lower complexity compared to other types, making them more straightforward to implement and integrate into systems.

14. Which ADC technique involves counting the number of clock pulses required for a ramp

signal to return to zero?

- a) Successive Approximations
- b) Ramp Technique
- c) Dual Slope Integrating Type
- d) Integrating Type (voltage to frequency)

Answer: c) Dual Slope Integrating Type

Explanation: In the Dual Slope Integrating Type ADC, the number of clock pulses required for a ramp signal to return to zero is counted to determine the input voltage.

15. What is the primary advantage of digital-to-analog conversion compared to analog-to-digital conversion?

- a) Higher complexity
- b) Limited accuracy
- c) Ease of implementation
- d) Susceptibility to noise

Answer: c) Ease of implementation

Explanation: Digital-to-analog conversion is often easier to implement compared to analog-to-digital conversion, especially in digital systems where processing and manipulation of digital signals are more straightforward.