

Introduction to Signals and Systems-Quiz

1. What best describes a signal?

- A. Information that changes over time or space
- B. A physical device used to measure data
- C. A mathematical equation with constant values
- D. A system that produces output only

2. Which of the following is an example of a signal used in autonomous vehicles?

- A. LiDAR point cloud
- B. Tire material
- C. Steering wheel
- D. Road pavement

3. A continuous-time signal is one that:

- A. Is defined for all values of time
- B. Exists only at integer time values
- C. Has only binary amplitude levels
- D. Repeats after a fixed interval

4. Which feature distinguishes a discrete-time signal?

- A. It is defined only at specific time instants
- B. It has continuous amplitude values
- C. It always repeats periodically
- D. It cannot represent real world data

5. A digital signal differs from a discrete-time signal because it:

- A. Can only take two amplitude values (0 and 1)
- B. Is always periodic
- C. Is continuous in time
- D. Cannot be stored in computers

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6. Which of the following best defines a periodic signal?

- A. A signal that repeats exactly after a fixed time
- B. A signal with random behavior
- C. A signal affected by noise
- D. A signal defined only at integer values

7. In signals and systems, a system is best described as:

- A. A set of components that transforms input signals into output signals
- B. A sensor that measures a signal
- C. A device that stores data
- D. A mathematical function with no physical meaning

8. Which subsystem of an autonomous vehicle primarily processes raw sensor signals into objects and lanes?

- A. Perception system
- B. Control system
- C. Planning system
- D. Communication system

9. What is noise in the context of signals and systems?

- A. An unwanted signal that distorts information
- B. A useful signal carrying information
- C. A system response to input
- D. An external vehicle influence

10. Which option best distinguishes disturbances from noise?

- A. Disturbances are external factors affecting system behavior
- B. Disturbances affect sensor measurements only
- C. Disturbances are internal system errors
- D. Disturbances are always random