MECHATRONICS IAT 1

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Mechatronics may be defined as the complete integration of mechanical system with electrical, electronics and computer systems into a single system *

- (●) True
- ( ) False

Mechatronics is the integration of electronics with mechanical system for the precise control of actuators/components of the mechanical system *

- (●) True
- ( ) False

Integrating microelectronics to electrically controlled devices is ____level of mechatronics. *

- ( ) Primary
- (●) Secondary
- ( ) Tertiary
- ( ) Fourth

Incorporating feedback systems is a characteristic of _____ level of mechatronics. *

- ( ) Primary
- ( ) Secondary
- (●) Tertiary
- ( ) Fourth

Incorporating intelligent control systems is a characteristic of _____ level of mechatronics. *

- ○ Primary
- ○ Secondary
- ○ Tertiary
- ◉ Fourth

A mechatronic product is not better than the sum total of its parts *

- ○ True
- ◉ False

A transducer is a device *

- ○ That converts one form of physical phenomenon to another
- ○ That converts one form of energy to another
- ◉ Both the described options
- ○ Neither described options

A transducer is a part of a sensor system *

- ◉ True
- ○ False

A sensor is a part of a transducer *

- (●) True
- ( ) False

Primary transducer is a device that *

- (●) Senses physical phenomenon and converts it to analogous output.
- ( ) Senses physical phenomenon and converts it to digital output.
- ( ) Both the described options
- ( ) Neither described options

Bourdon pressure gauge is an example of *

- ( ) Primary transducer
- ( ) Secondary transducer
- (●) Both the described options
- ( ) Neither described options

A transducer can give an output in both analog and digital format *

- (●) True
- ( ) False

A transducer which self generates power is an *

- (●) Active transducer
- ( ) Passive transducer
- ( ) Non passive transducer
- ( ) Self transducer

A transducer which requires external power is *

- ( ) Active transducer
- (●) Passive transducer
- ( ) Non active transducer
- ( ) Non passive transducer

Sensor is a device which *

- ( ) Can respond directly to physical attributes
- ( ) Is a highly refined transducer
- ( ) Provides an output equivalent to the quality being measured.
- (●) All the above

Transducer and signal conditioner are part of a sensor component *

- (●) True
- ( ) False

A photo sensor senses the presence of *

- (●) Light
- ( ) Pressure
- ( ) Sound
- ( ) None of the abov

A branch of photoelectric sensors which deals with vacuum or gas filled tube is called *

- (●) Tube electronics
- ( ) Vacuum electronics
- ( ) Diodic electronic
- ( ) Conductive electronic

the release of electrons from a usually solid material (such as a metal) by means of energy supplied by incidence of radiation and especially light *

- (●) Photo emission effect
- ( ) Photo conduction effect

LDR, light dependent resistors are *

- (●) Photo detective transducers
- ( ) Photoconductive transducers
- ( ) Photo emissive cell

_____ is useful for light detection of very weak signals, is a photoemissive device in which the absorption of a photon results in the emission of an electron. These detectors work by amplifying the electrons generated by a photocathode exposed to a photon flux *

- ( ) Photodiode
- ( ) Photoemissive cell
- (●) Photo multiplier tube

The _____t is the generation of voltage and electric current in a material upon exposure to light. It is a physical and chemical phenomenon. *

- [x] photovoltaic effect
- [ ] LDR
- [ ] Tube electronics

Which one of the following isn't an application of light sensors *

- [ ] Printers and copiers
- [ ] Contactless light switching
- [ ] Gesture detection for smart phones
- [x] Automatic washing machine

Proximity sensors are used to detect *

- [ ] Closeness
- [ ] Nearness
- [ ] None of the above
- [x] Both of the above

Proximity sensors are used to detect *

- ○ Metals
- ○ Nonmetals
- ○ None of the above
- ◉ Both of the above

Which of the following is not a principle of Proximity sensors *

- ○ VAriable reluctance
- ○ Eddy current loss
- ○ Hall effect
- ◉ Photovoltaic effect

Which of the following is used to detect the proximity of only metal objects *

- ◉ Inductive proximity sensor
- ○ Capacitive proximity sensor
- ○ Hall effect sensor

____ sensors are used for non-contact detection of metallic objects. Their operating principle is based on a coil and oscillator that creates an electromagnetic field in the close surroundings of the sensing surface. *

- (●) Inductive proximity sensor
- ( ) Capacitive proximity sensor
- ( ) Hall effect sensor

Capacitive proximity sensor can be used to detect metallic and non metallic objects *

- (●) True
- ( ) False

_____ operating principle is based on the use of reed con-tacts, whose thin plates are hermetically sealed in a glass bulb with inert gas. The presences of a magnetic field makes the thin plates flex and touch each other causing an electrical contact. *

- ( ) Inductive proximity sensor
- ( ) Capacitive proximity sensor
- ( ) Hall effect sensor
- (●) Magnetic proximity sensor

A complete____ proximity sensor includes a light source, and a sensor that detects the light. *

- (●) Optical proximity sensor
- ( ) Capacitive proximity sensor
- ( ) Hall effect sensor
- ( ) Magnetic proximity sensor

Loretnz force is a working principle of *

- ( ) Optical proximity sensor
- ( ) Capacitive proximity sensor
- (●) Hall effect sensor
- ( ) Magnetic proximity sensor

The devices that provide the means for a computer to communicate with the user or other computers are referred to as: *

- ( ) CPU
- ( ) ALU
- (●) I/O
- ( ) none of the above

The circuits in the 8085A (or any microprocessor) that provide the arithmetic and logic functions are called the: *

- ( ) CPU
- (•) ALU
- ( ) I/O
- ( ) none of the above

The items that you can physically touch in a computer system are called: *

- ( ) software
- ( ) firmware
- (•) hardware
- ( ) none of the above

Because microprocessor CPUs do not understand mnemonics as they are, they have to be converted to _____. *

- ( ) hexadecimal machine code
- (•) binary machine code
- ( ) assembly language
- ( ) all of the above

A register in the microprocessor that keeps track of the answer or results of any arithmetic or logic operation is the: *

- ○ stack pointer
- ○ program counter
- ○ instruction pointer
- ◉ accumulator

Which of the following are the three basic sections of a microprocessor unit? *

- ○ operand, register, and arithmetic/logic unit (ALU)
- ◉ control and timing, register, and arithmetic/logic unit (ALU)
- ○ control and timing, register, and memory
- ○ arithmetic/logic unit (ALU), memory, and input/output

____is a small computer on a single metal-oxide-semiconductor integrated circuit chip. *

- ◉ Microcontroller
- ○ Microprocessor
- ○ Mini computer
- ○ Computer chip

A device on the CPU used to store temporary data is *

- ( ) Register
- ( ) ALU
- (•) RAM
- ( ) Rom