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③

Answer to the ques no-1 (a)

Define keyboard: A keyboard is a peripheral device that enables a user to input text into a computer or any other electronic machinery. A keyboard is an input device and is the most basic way for the user to communicate with a computer. This device is patterned after its predecessor, the typewriter, from which the keyboard inherited its layout, although many keys or letters are arranged to function as electric switches. The keys include punctuation alphanumeric and special keys like the windows key and various multimedia keys, which have specific functions assigned to them.

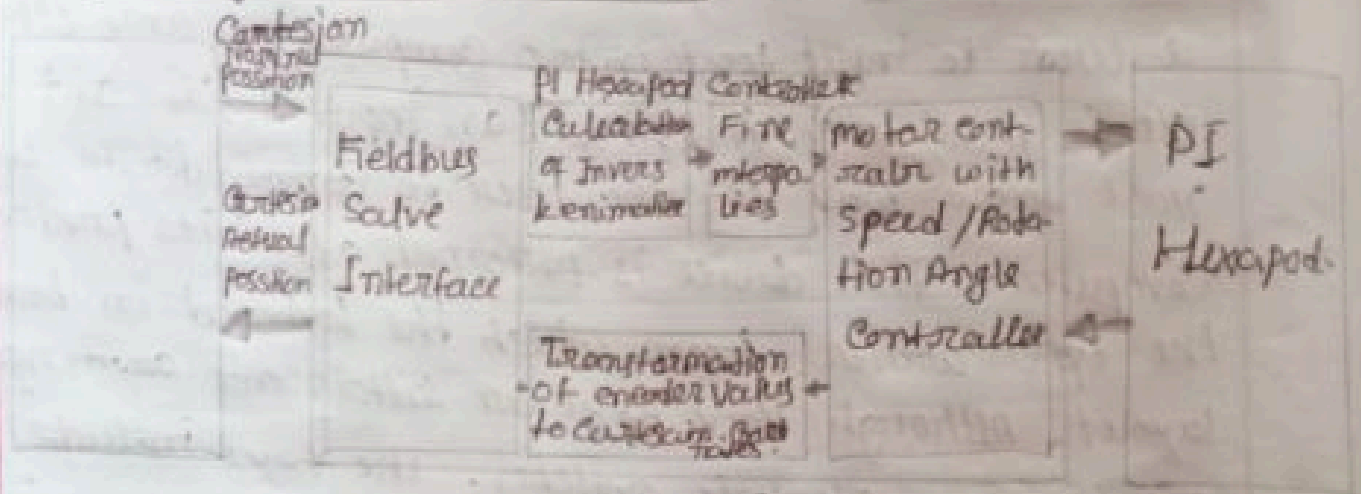
☐ Contact type keyboard switch is widely used switch.

* pressing the keyboard plunger causes the contacts to touch and to produce a voltage.

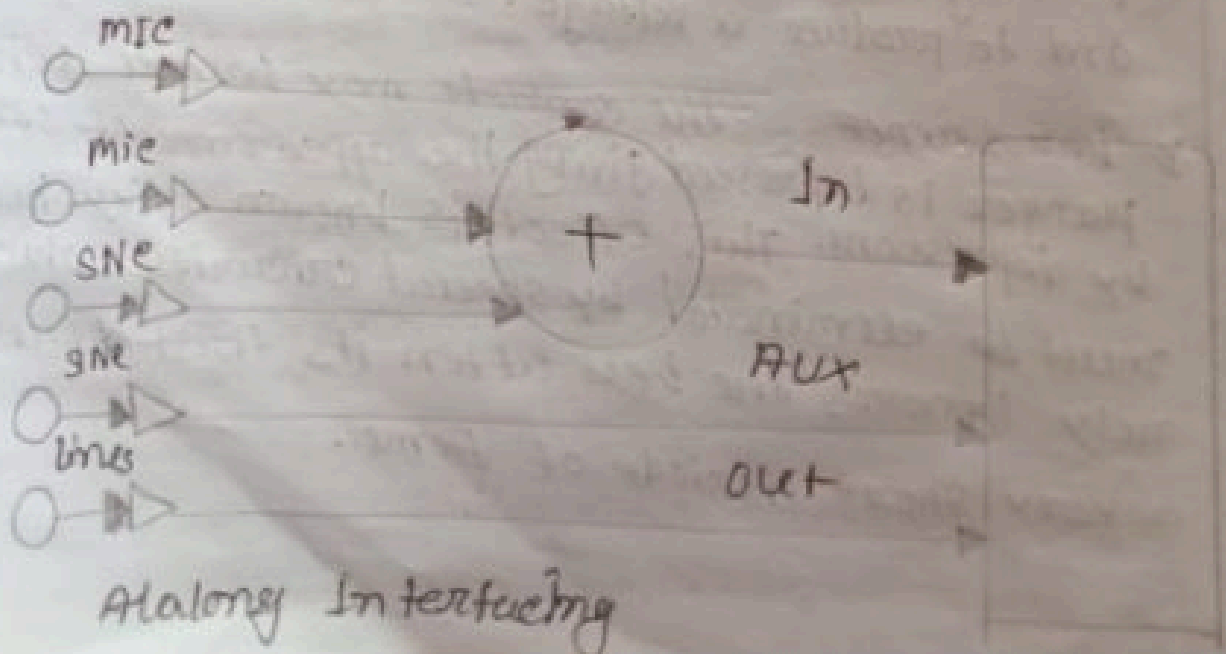
* key bounce ... the contacts may bounce when the plunger is depressed giving the appearance of several rapid key depressions. This effect is known as key bounce. This must be eliminated by special circuits which effectively ignores the key after its first depression for a very short period of time.

Answers to the ques No-1 (b)

+ Analog Interfacing Draw:



⇒ An Analog Interfacing is point-to-point with no exact requirements with regard to cable type and cable. The signal from sensors that measure surrounding natural conditions such as temperature, pressure.



Analog Interfacing

Ans to the ques No-2(a)

Sensor: A sensor is a device which converts the physical quantity into corresponding electrical output. A transducer is device that transforming energy from one form to another, such as speed into electrical signal. A sensor doesn't have any other component except it self,

* Sensor type of list:

- (i) Accelerometer
- (ii) Ambient temperature
- (iii) Magnetic field sensor.
- (iv) Gyroscope.
- (v) Heart rate
- (vi) Light
 - proximity
 - pressure

→ Transducer: A transducer device that converts energy from one form to another usually a transducer converts a signal from one form of energy to signal in another. Transducers are often employed at the boundaries of automation, measurement and control system where electrical signals convert to and from other physical quantities (energy, force, torque, light, motion, position, etc) The process of converting one form of energy to another is known as transduction.

⇒ Mechanical transducer: So called as they convert physical quantities in to mechanical out put and vice versa.

⇒ Electrical transducer: However convert physical quantities in to electrical out put signal.

Ans to the ques NO - 2 (B)

There are couple advantages and disadvantage:

In temperature measurement, the thermocouple term is common and is mainly used in thermometry as the sensor of temperature measurement. The ability of thermocouple who can measure very high until very low temperature is the main reason why so many industries applying it. This article has given the benefits and drawback of the thermocouple to better understand this topic.

Advantages of thermocouple:

- ① very wide temperature range About -200°C to 2500°C
- ② First Response time
- ③ The are simple construction
- ④ low initial cost
- ⑤ Durable
- ⑥ Easy to read has a clear screens good seal.
- ⑦ Quick response for any temperature changes.

- ⑧ precision and accuracy in temperature measurement.
- ⑨ It is not easily broken good durability.
- ⑩ Not required bridge circuit.
- ⑪ Good accuracy.
- ⑫ High speed response.

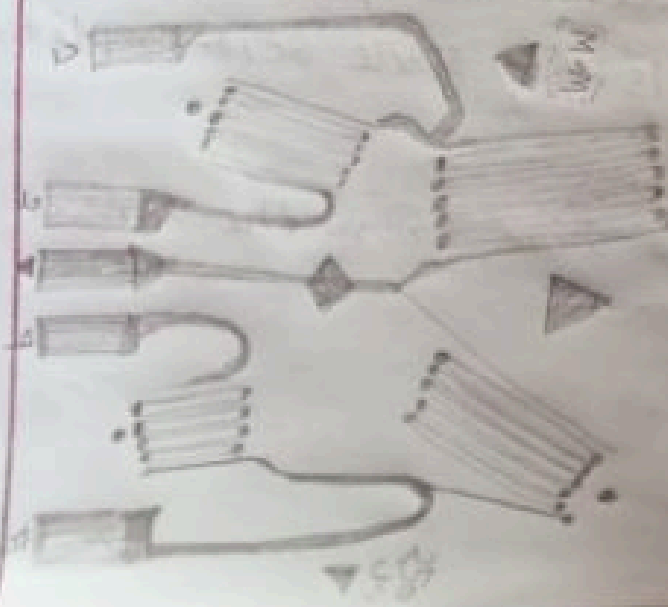
Dis Advantages of Thermocouples

- ① Not as stable as RTD
- ② more susceptible to RFI / EMI
- ③ Recalibration is difficult.
- ④ They are not linear.
- ⑤ They have a low output voltage.
- ⑥ Low sensitivity
- ⑦ ~~Less sensitivity~~ they require care to be taken for operation the stray voltage pick up is possible
- ⑧ They require a reference for operation the stray voltage
- ⑨ As output voltage is very small so it amplification.
- ⑩ Difficult to verify.
- ⑪ Require expensive to wire from the sensor to recording device.

Ans to the ques No-3 (A)

Strain Gage: A strain gage work to measure the amount of strain on a given object. At this most basic form, a strain gage converts a change in dimension to a change in electrical resistance. The ratio of mechanical strain to electrical resistance is what is known as the gage factor, and specific to the type. A lot of strain gage use strain gage can be used to sense expansion as well as contraction and produce positive or negative signals to distinguish between the two.

In general a strain gage makes use of very fine wire or metallic foil arranged in a grid pattern. The electrical resistance of strain gages, metallic grid changes in proportion to the amount of strain experienced grid by the object, allowing the operator a clear accurate measurement of strain, e.g. how much the item is stretched or twisted.



Ans to the ques No-3 (B)

Paddle wheel method: As the magnets in the blades spin past the sensor, the paddle wheel meter generates a frequency and voltage signal which is proportional to the flow rate. The faster the flow the higher the frequency and the voltage out put. working principle of paddle wheel flow meter.

The paddle wheel method is designed to be inserted inserted into a pipe fitting, either in-line or insertion style. These are available with wide range of fitting styles. Connection methods and materials such as PVDF, polypropylene and stainless steel. Similar to turbine meters, the paddle wheel meter require a minimum run of straight pipe before and after the sensor. The processed signal can be used to control the process generate an alarm and send signal to external e.t.c

Single jet / paddle wheel flow meter.

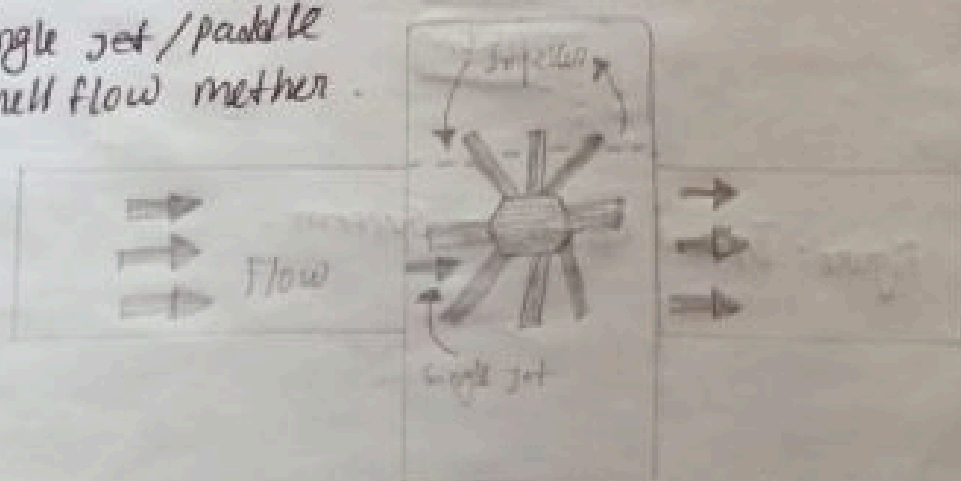


Fig: paddle wheel method

Ans to the ques No-9(B)

Typical Computer system: Excluding CPU and memory a
connected to as peripheral devices.

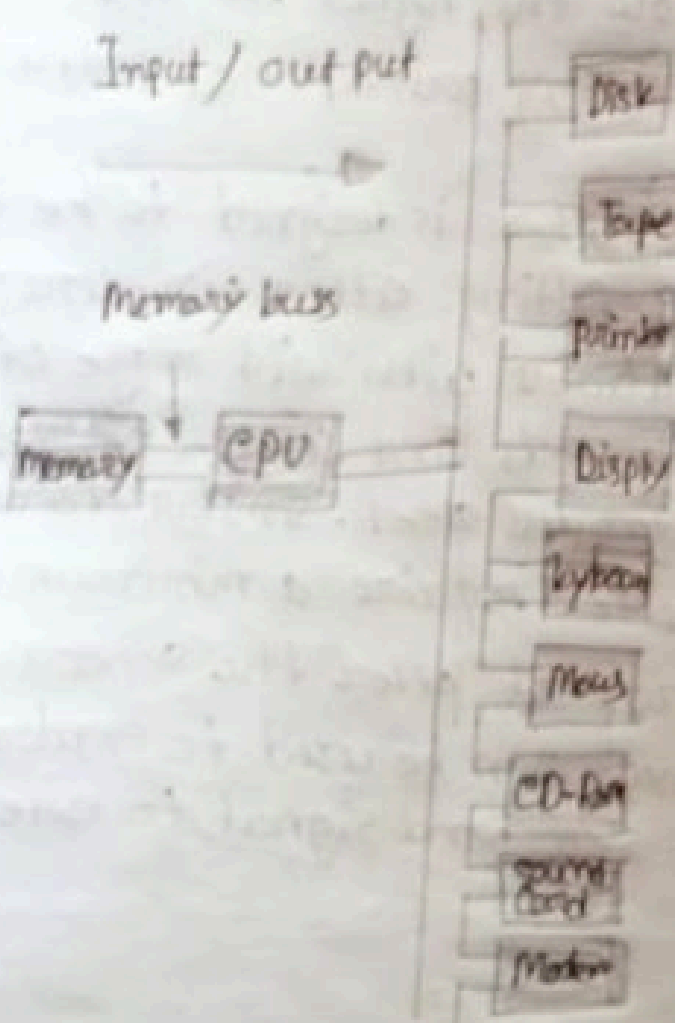


Figure: Typical Computer System.

Ans to the ques no-4 (c)

Interrupt acknowledgement:

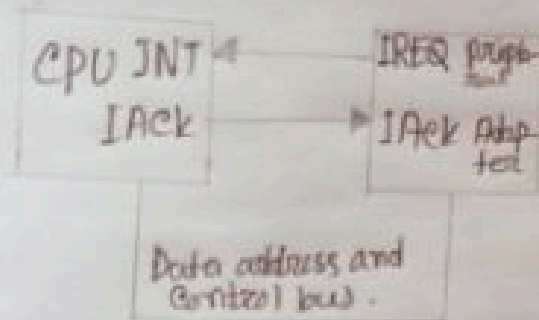


Fig: Interrupts with Acknowledge

- * Interrupt requests are assumed to remain asserted until Reset by instructions in the service routine. But this is not the most efficient technique.
- * Until a request is de-asserted it is not possible for another request to be seen. This may result in data from a fast peripheral being lost while service routine is getting around to clearing a low priority interrupt.
- * It could be better if the request could be cleared quickly after the request is noticed.