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Course :- CSE-333 (Computer peripherals & interfacing)

Dept :- CSE (Evening).

Ans: to the Q: NO: 01

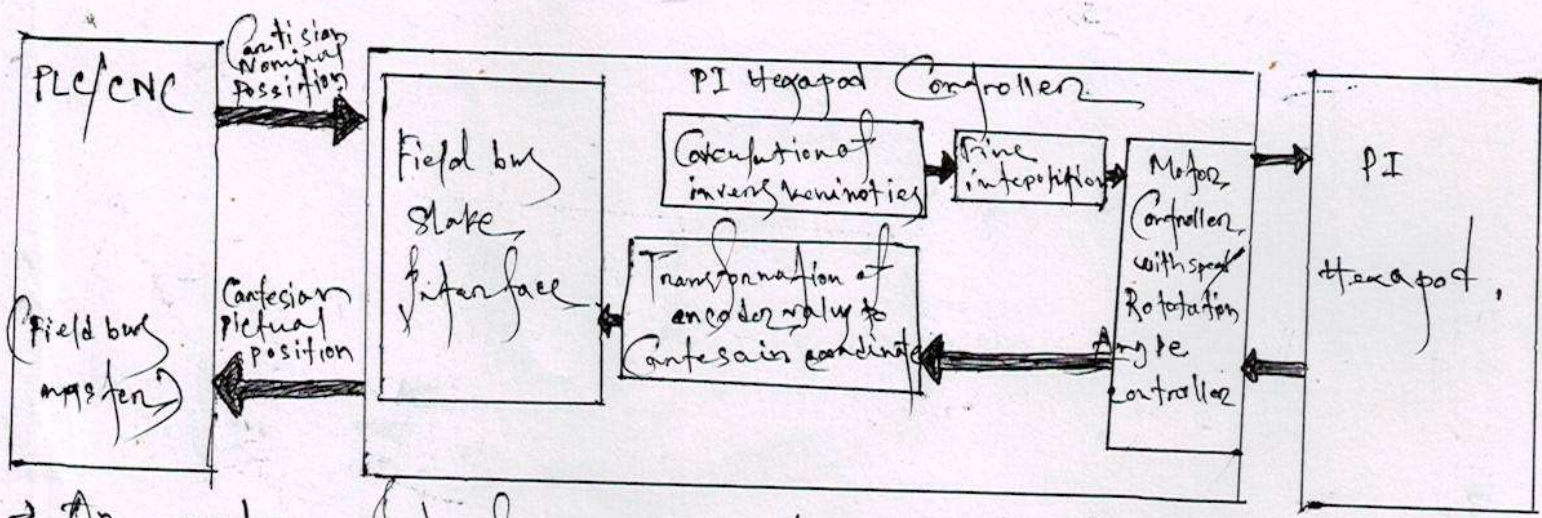
(A) Ans: Define keyboard: A keyboard is a peripheral device that enables a user to input text into a computer or any other electronic machinery. A keyboard is an input device is the most basic way for the user to communicate with a computer. This device is patterned after its predecessor, the type writer,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

* Contact type keyboard switch : \Rightarrow widely used switches.

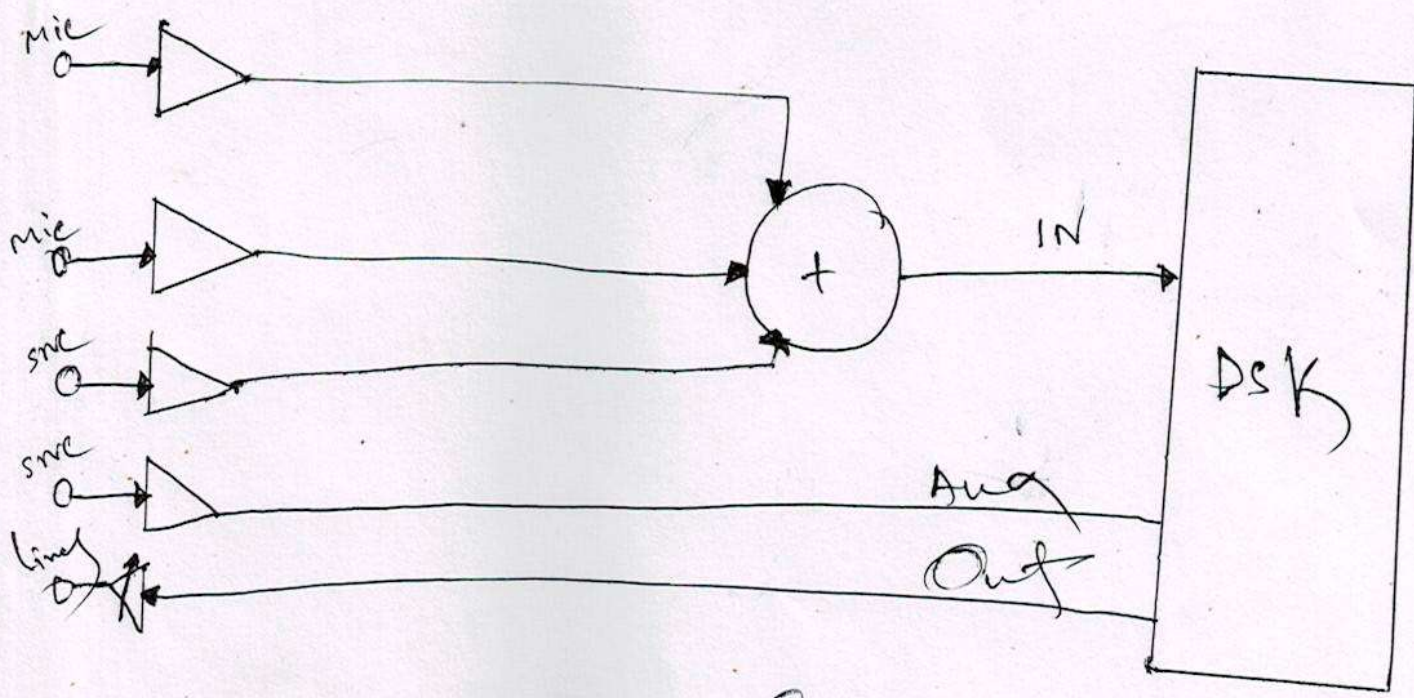
\Rightarrow Pressing the keyboard plunger causes the contacts to touch & to produce a voltage.

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

1(B) ans: Analog Interfacing Draw:



⇒ An analog Interfacing is point to point with no exact requirements with regards to cable type & cable. The signal from sensors that measure surrounding natural factors such as temperature, pressure.



Analog Interfacing

(A) Sensor: A sensor is a device which converts the physical quantity into corresponding electrical output. A transducer is a device that transforms energy from one form to another. Such as speed into electrical signal. A sensor doesn't have any other component except itself.

- Sensor type of list:
- ① Accelerometer
 - ② Ambient temperature
 - ③ Magnetic field sensor
 - ④ Gyroscope
 - ⑤ Heart rate
 - ⑥ light
 - Proximity
 - Pressure

→ Transducer: A transducer device that converts energy from one form to another usually a transducer converts a signal one form of energy to signal in another. Transducer are often employed at the boundary of automation, measurement and control system, where electrical signals convert to & 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 into mechanical output or vice versa.

→ Electrical transducer: However convert physical quantities into electrical output signal.

(2) (B) Ans: Thermo Couple Advantages & disadvantage: In temperature measurement, the thermo couple form of temperature measurement mainly used in thermometer as the sensor ability of thermo couple 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 & drawback of the thermocouple to better understand this topic.

Advantage of thermocouple:

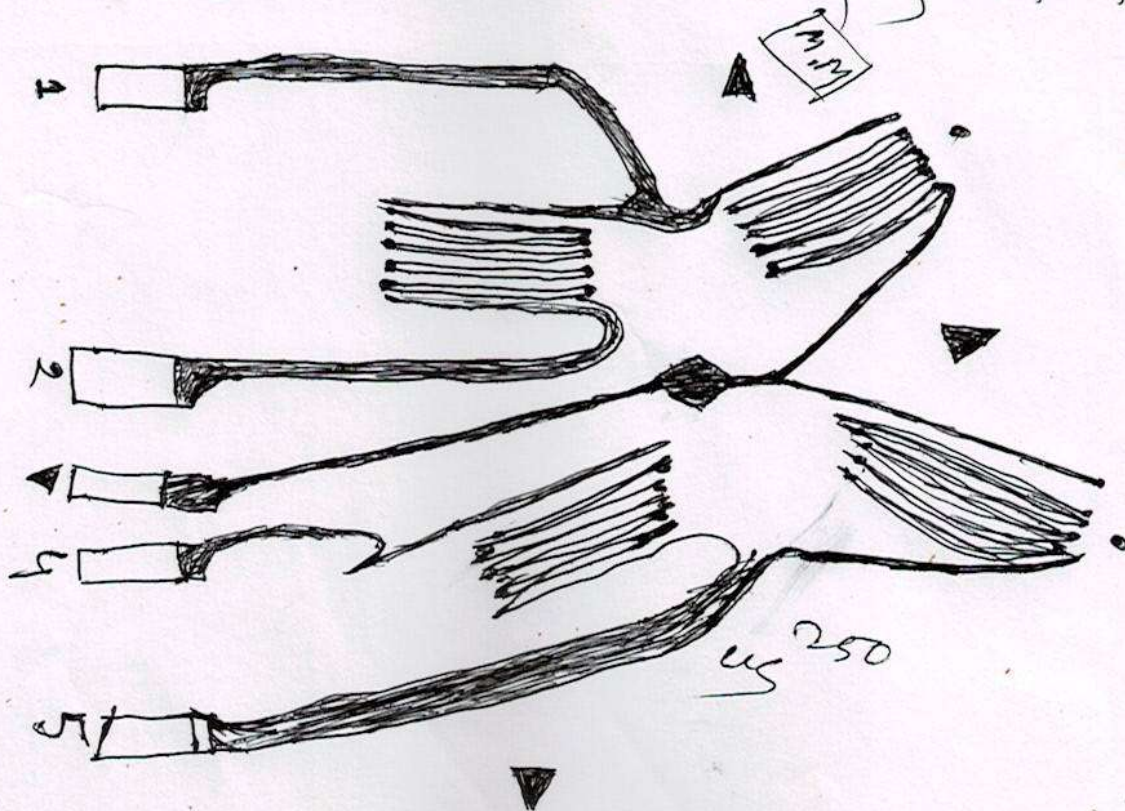
- ① Very wide temperature range about 200°C to 2500°C .
- ② Fast response time.
- ③ They are simple construction.
- ④ Low initial cost.
- ⑤ Durable.
- ⑥ Easy to read by a clear screen good seal.
- ⑦ Quick response for any temperature changes.
- ⑧ Precision accuracy in temperature measurement.
- ⑨ It is not easily broken good durability.
- ⑩ Not required bridge circuit.
- ⑪ Good accuracy.
- ⑫ High speed response.

Dis Advantage of thermo couple:

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

(A): Answer: 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 is what is know as the gage factor, & is specific to the type of strain gage used. Strain gage can be used to sense expansion or well as contraction & produce positive or negative signals to distinguish between the two.

In general a strain in a grid pattern, the electronic resistance of strain gages, metallic grid changes in proportion to the amount of strain experienced by the object offering the operator a clear accurate measurement of strain e.g. how much the item stretched or twisted.



3(B): Ans: Paddle wheel method: As the magnets in the blades spin part 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 output. Working principle of paddle wheel flow meter.

The paddle wheel method is designed to be inserted into a pipe fitting either in line or insertion style. There are available with wide range of fitting styles, connection methods & materials such as PVDF polypropylene, and stainless steel. Similar to turbine meters, the paddle wheel meter, require a minimum run of straight pipe before & after the sensor. Flow display & controllers are used to received the signal from the paddle wheel meter converted into actual flow rate or total flow. Likewise the processed signal can be used to control the process generate analog and signal to external e.t.c.

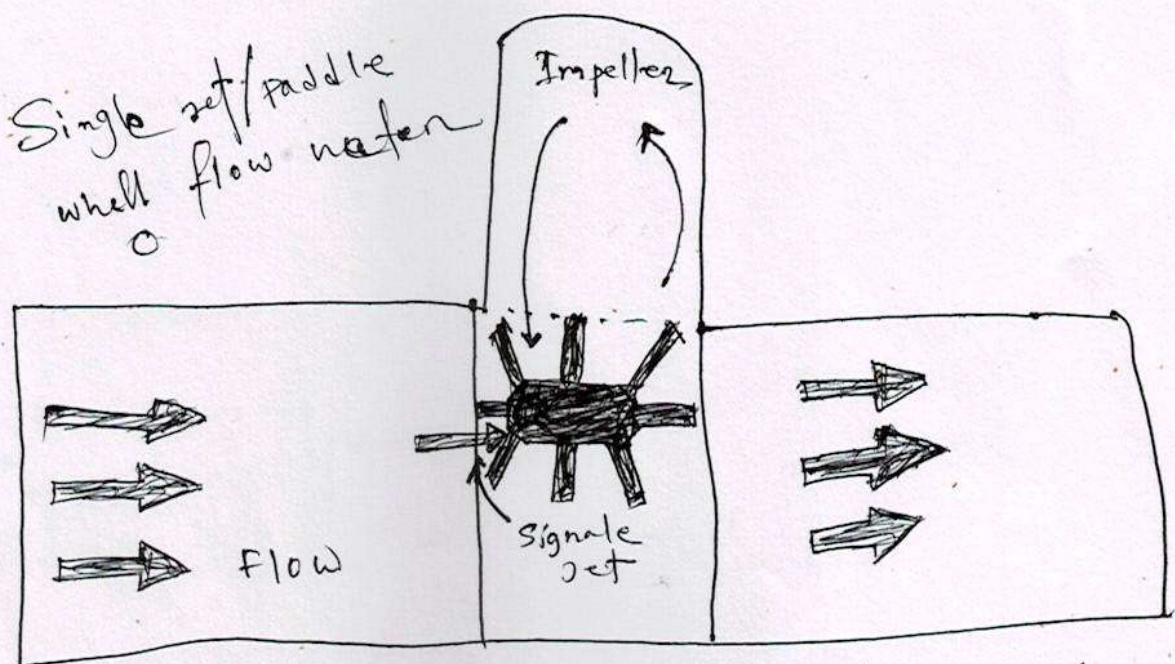


Fig: paddle wheel method.

Ans. to the Q: NO: 4(B)

(B) ans: Typical Computer system; Excluding CPU & memory all other Input Output devices connected with the Computer system are all together referred to as peripheral devices.

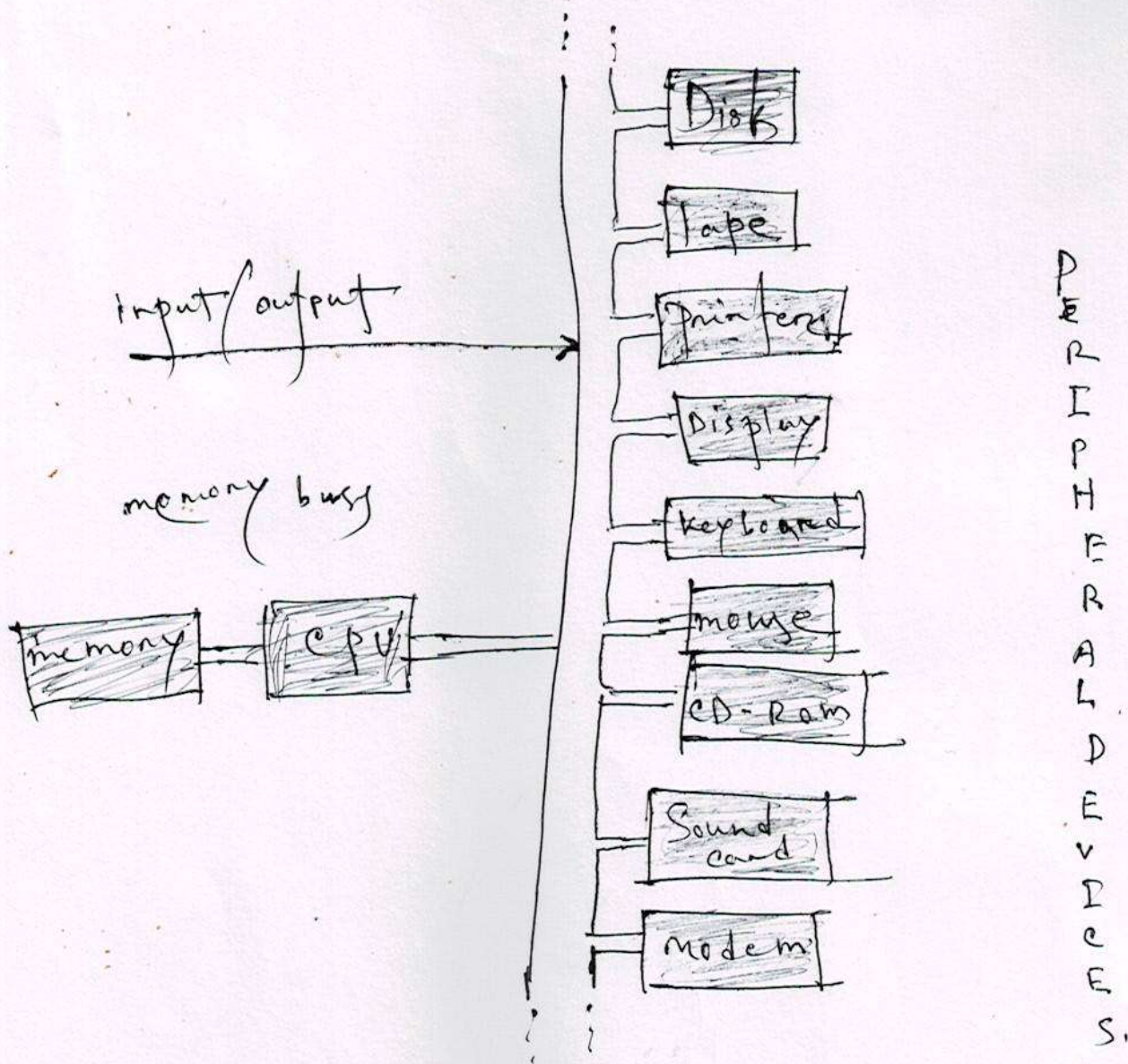


Fig: Typical Computer System.

Qc Ans: Interrupt Acknowledgement:

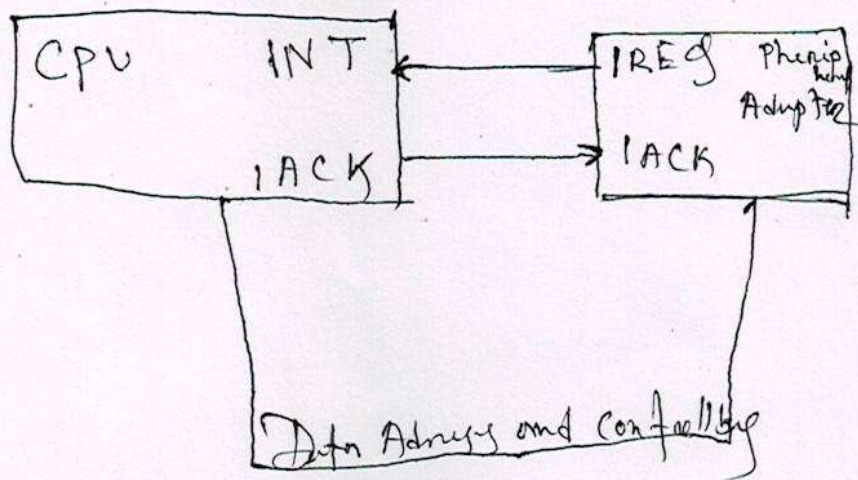


Fig: Interrupts with Acknowledge.

- ⇒ 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 first 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.

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