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Course Title :- Computer Peripherals and Interfacing

Course Code :- CSE-333

"Final Exam"

Ans to the Q No 1(a)

Contact Type Keyboard Switch:

(a) Widely used switches.

(b) Pressing the key plunger causes the contacts to touch and to produce a voltage.

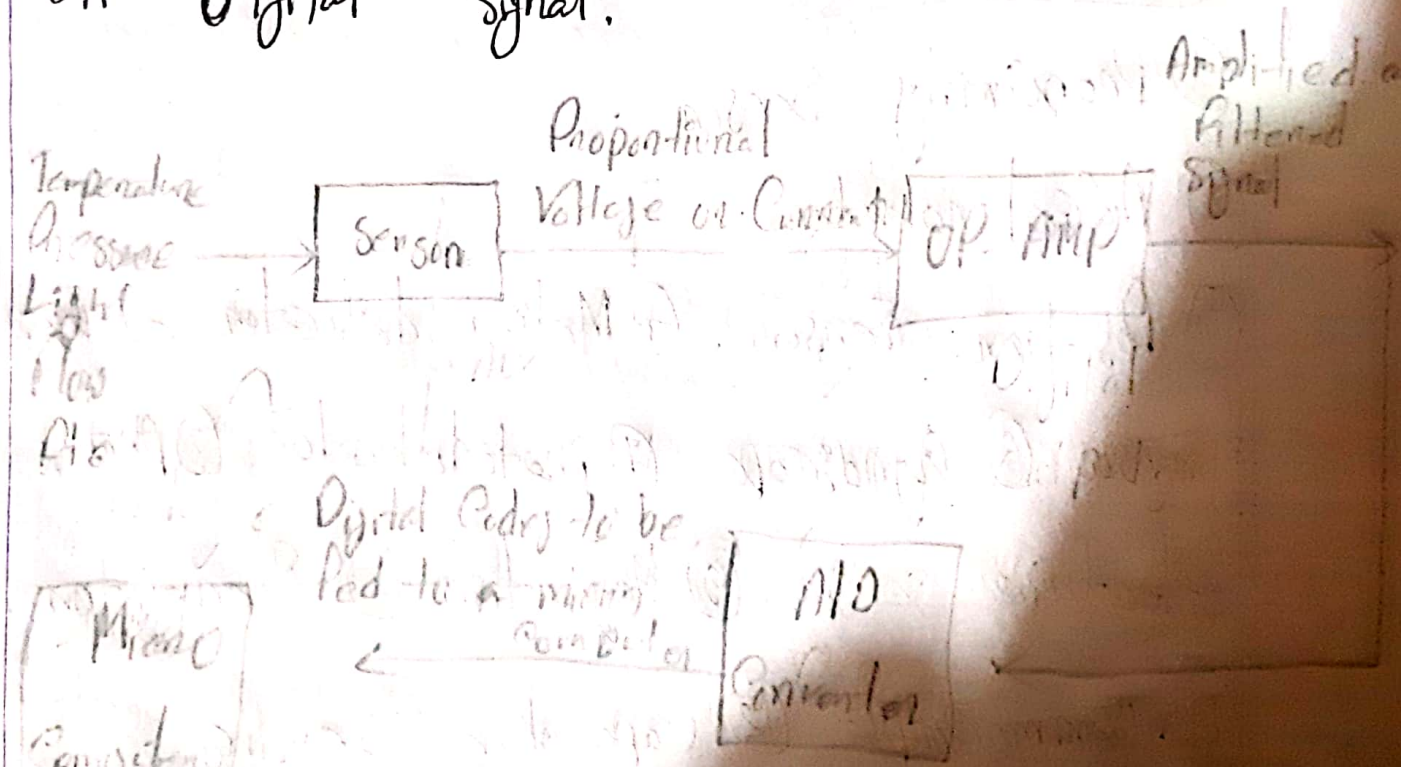
(c) Key bounce - the contacts may bounce when the plunger is depressed giving the appearance of several rapid key depressions. This effect is known a key bounce. This must be eliminated by special circuitry which ~~effect~~ effectively

ignores the key after its first depressions for a very short period of time.

Ans to the Q No 1(b)

Analog and digital signals are completely different even if they have the same voltage. However, Analog Circuits are bipolar (+ve and -ve) and many require Typically +5V & -5V power. This goes hand in hand with CMOS logic to create Mixed Signal circuitry so common in interfacing.

Where a ~~Voltage~~ Voltage needs to be measured by a Micro-controller, the signal needs to be converted. This is the task of and ADC. Typically an analog signal would convert the signal voltage into a 12-Bit Digital Signal.



Ans to the Q No 2(a)

Sensor: A device which detects or measures a physical property and records, indicates, or otherwise responds to it.

List of sensors:-

① Proximity Sensor
② Accelerometer.
③ Position Sensor. ④ Motion detector. ⑤ Pressure sensor. ⑥ Gyroscope. ⑦ photodetector ⑧ photo-electric sensor. ⑨ Magnetism. ⑩ Thermistor.
⑪ Thermocouple. ⑫ Capacitive sensing.
⑬ Lidar ⑭ Throttle position Sensor.

(15) Hall effect sensor. (16) Ultrasonic sensors.
(17) Force sensing resistor. (18) Image sensor.
(19) Oxygen sensor. (20) Hygrometer. (21) Carbon monoxide detector.

Transducers:-

(1) Chemical transducers.
(2) Piezo electric transducers.
(3) Mutual induction transducers.
(4) Electromagnetic transducers.
(5) Hall Effect transducers.
(6) Photo conductors.
(7) Solar cells.

Ans to the Q No 2 (b)

Advantages of Thermocouple:

a) One particular advantage of thermocouples is that the sensing element themselves are very small, allowing thermocouples to be inserted into very small spaces and to respond to rapidly changing temperatures.

Disadvantages:

a) The thermocouple is useful only over a limited range of temperature due to the non-linear shape of the characteristic.

b) The output from a thermocouple is small, of the order of millivolts for a 10°C temperature difference. Because

of the small voltage output, amplification is usually needed unless the thermocouple is used for temperature measurement along with a sensitive millivoltmeter.

(d) The main limitation is precision, system errors of less than 1°C can be difficult to achieve.

Ans to the Q. No 3(a)

Strain gage:

A small resistor whose value changes when its length is changed. It may made of thin wire, thin foil or semiconductor material.

One end of a piece of spring steel is attached to a fixed surface.

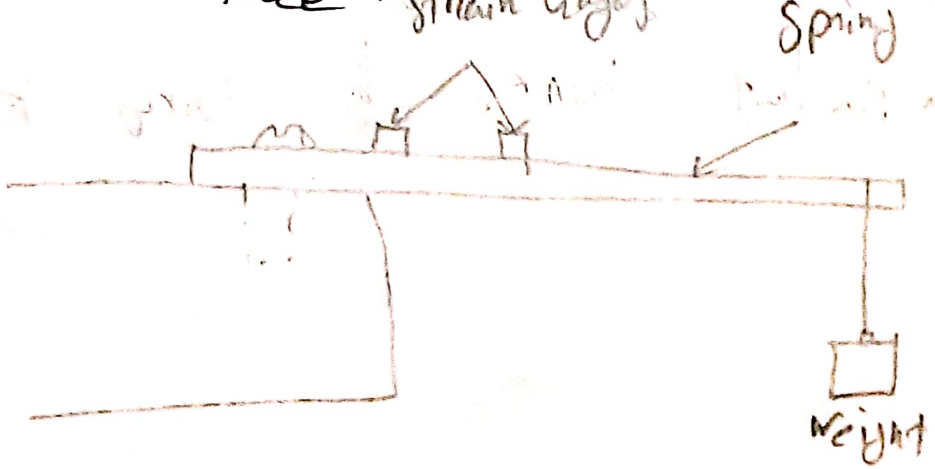
A strain gage is glued on top of the flexible bar.

The for on weight to be measured is applied to the unattached end of the bar.

As the applied force bends the bar, the strain gage is stretched, increasing its resistance.

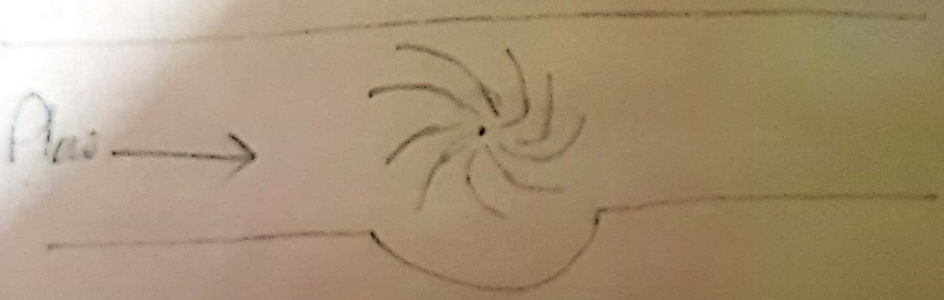
The change in resistance is directly proportional to the applied force.

If a current is passed through the strain gage, then the change in voltage across the strain gage will be proportional to the applied force.



Ans to the Q No 3 (b)

A paddle wheel method is very important method. We can use this method in our daily life. We can do important works by using it.



Fig(a) Paddle wheel Method.

a) A paddle wheel meter method is shown in the flow as in fig. (a).

b) The rate at which paddle wheel turns is proportional to the rate of flow of a liquid or gas.

(c) An optical encoder can be attached to the shaft of the paddle wheel to produce digital information as to how fast the paddle wheel is running.

Ans to the Q No 5(c)

Peripheral Adapter:

A Peripheral Interface Adapter is a peripheral integrated circuit providing parallel I/O interfacing for microprocessor systems.

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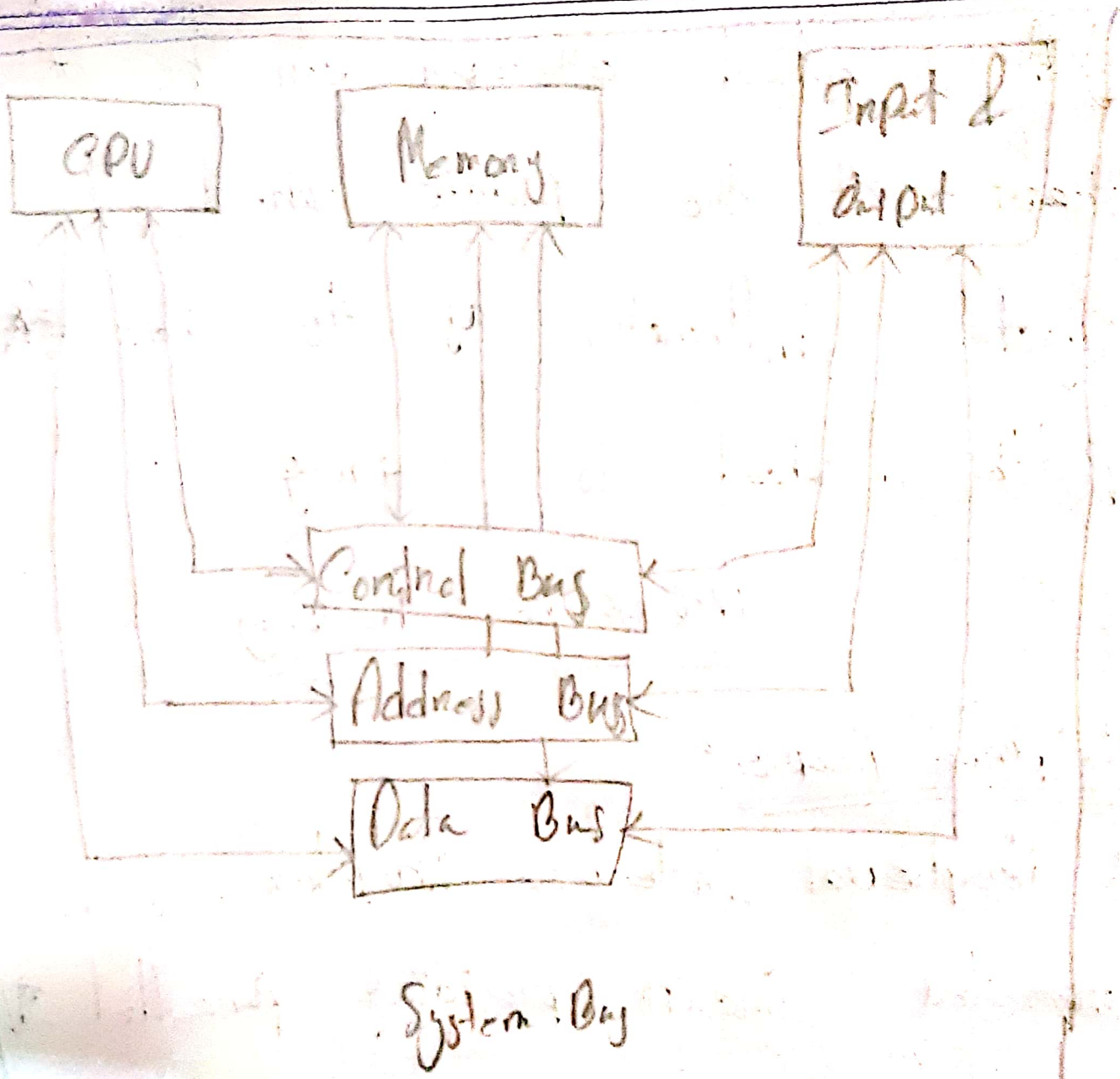

Fig:- Data highway bus architecture.

Ans to the Q No 5(b)

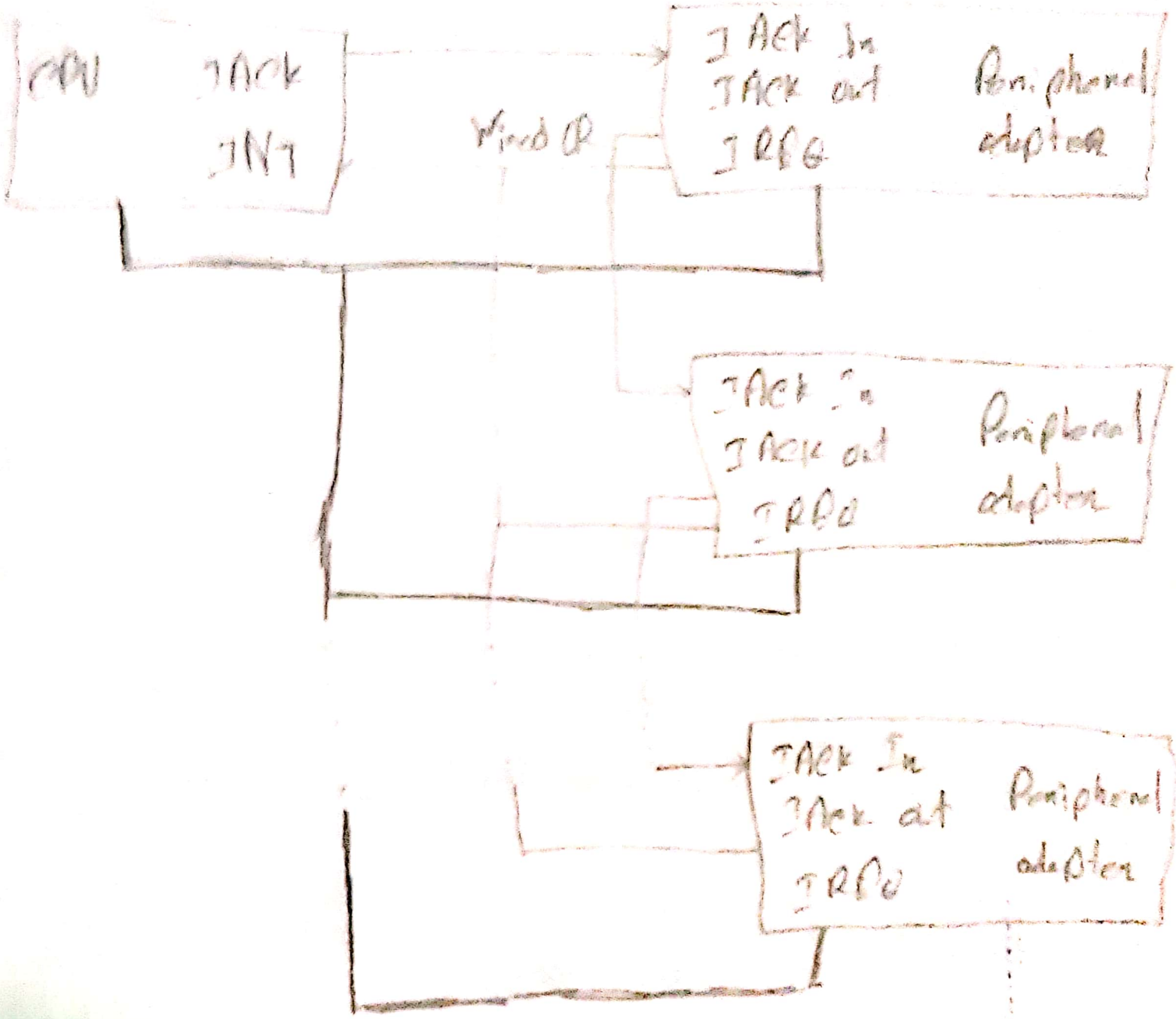

Figure: Priority Interrupts using a daisy chain.