* Who → Write how a program create as a software product lec-2 P-6

* U-3 → Web 3.0 or 4IR challenges

* U-4 ⇒ 33 page (code of eithics)

• U-5 ⇒ case study (P-10)
  • How it will going to a sustainable development
  • legacy system (26 page) →

* Lee'

Mainly a sample topic

Diagram, eithical, case study, legacy system, challenges

UML language

le-6 ⇒ Project management and requirements.
Requirments analysis

lec-7 to lec-9 ⇒ (Scrum, XP এসব)

• Agile   Sample question থেকে
• DevOps   এর করতে কোনটা কোন methodology,
principle Agile model   pros and cons and
difference between them.

16
page

Peripheral:- A peripheral is a device that is connected ~~part~~ to a host computer but not part of it. It expands the host computer capabilities but it is not a form of a computer internal architecture.

Interfacing:- The techique by which we can add additional devices with the main proceessor is called interfacing.

Interface:- An interface is the point of interaction with software or computer hardware or with peripheral devices. 2 types of Interface: ① Software ② Hardware

Software Interfaces:- Software interfaces are the languages, codes and the messages that communicat with each other and with the hardware. Examples are Windows, Mac and Linux operating systems the SMTP email and the protocol that activate peripheral devices.

ICPC WORLD FINALS DHAKA
6-11 NOVEMBER 2022
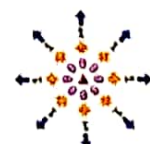
Interfacing example:- In general Keypads are used as input devices for computers. But among various types of interfacing devices, Keypad is also one type of frequently used interfacing peripherical devices.

Pont:- A computer port is a connection point or interface between a computer and an external or internal device.

Lec-2

Resistance Thermometeres:- Thin wire of temperature sensitive metal is wound on a suitable supported inside a tiny Pyrex tube. It is bad because of sensitivity.
$$R_t = R_0 (1 + \alpha (T_t - T_0))$$

Thermistor is a semiconductor material fabricted transducer. The resistance of a thermistor is dependent on the material from which it is made. It is used because of 1) High Sensitivity 2) High Resistivity 3) Compactness.
$$R_t = R_0 \, exp [\beta (1/T_t - 1/T_0)]$$

<u>Thermocouple:</u> A thermocouple is a active transducer for wide range. It is was consists 2 junction j_1, j_2 of two different metal in the figure.
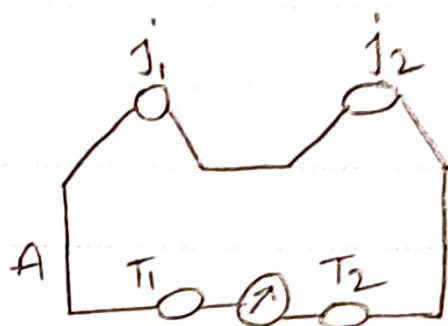
An emf is developed between the terminals T_1 & T_2 if there is a temperature difference between j_1 and j_2.

Strain Gauge:- Operation of Strain gauge is change of resistance in a thin coil or foil when it is subjected to deformation under stress.
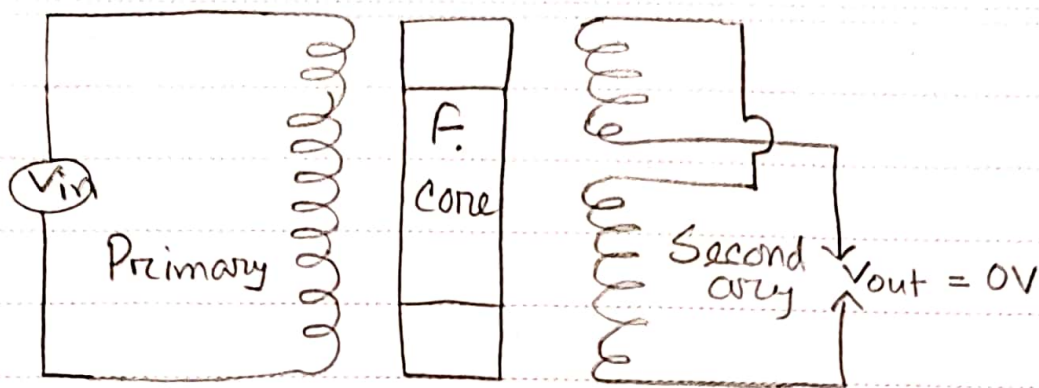
Gauge Factor $G = \dfrac{\Delta R/R}{\Delta L/\Delta L}$

Linear Variable Differential Transformer(LVDT)

1. Primary winding wound on the central part of a tube.

2. Two secondary windings wound on two ends.

3. A ferromagnetic core moves inside the tube.

The core is in at the central position
- Equal voltages are induced on the two windings.
- Output voltage is zero.

features of LVDT

1) High Sensivity
2) " Linearity
3) Low impedance
4) Wide range of AC frequency.
5) Simple construction and ruggedness.

Optocouplers

- Defination, configuration, working principle, when to use, photosensitive device, light sensor, drawbacks.

Optocouplers :-
Optocoupler is an electronic component that transfers. physical & electrical signals between two isolated circuits. Optocoupler also called opto-isolator. It provides optical isolation and coupling between two circuits.

Working Principle :-
Two parts are used in an optocoupler: an LED that emits infrared light and a photosensitive device that detects light from the LED. The input circuit takes the incoming signal, whether the signal is AC or DC and uses the signal to turn on the LED. LED and the photosensitive device are assembled in such a way that the light emitted by the LED would strike the photosensitive device and trigger it into
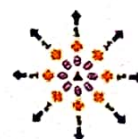
conduction. 6| Output waveform is identical to the input wave form, although their amplitudes usually differ.

When to use Optocouplers?

There are many situation where signals and data need to be transferred from one sub system to another whit within a piece of electronics equipments or from one to another electric equipment without making a direct electrical connection. This is because the source and destination devices are at very different voltage levels, like a microprocessor which is operating a 5V DC but being used to control a triac which is switching 240V AC.

Optocoupler Configurations:

1　　　　　　　　　　　　　4
Cir 1 　IR BEAM　　　　　　Cir 2
2　　IR LED　　Photo　　3
　　　　　　　　Transistor
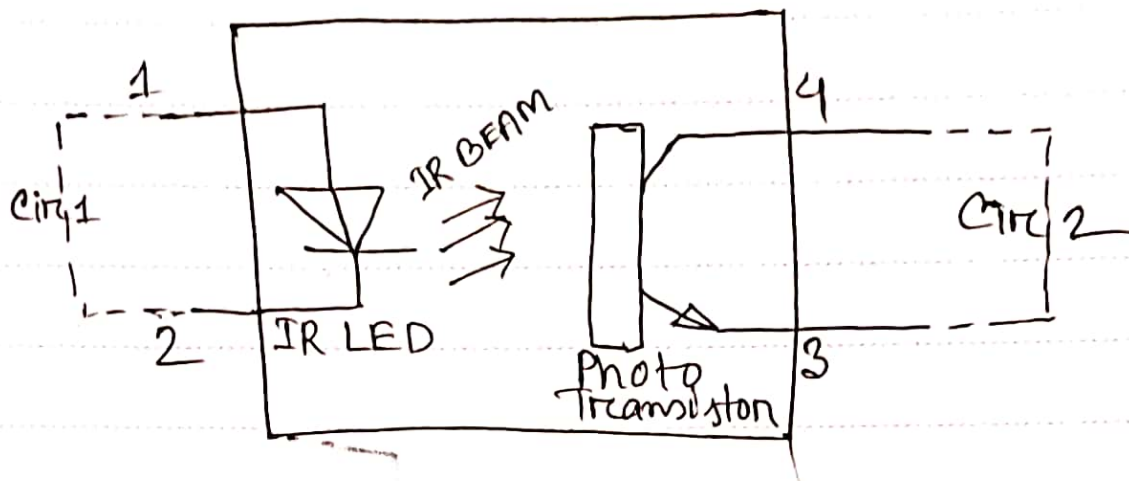
2 parts ① Receiving Side
　　　　　② Transmitting side.

Both sides are encapsulated in a single
8 pin dual-in-line packages.

In transmitting side the LED can be made
to emit th light by passing specified
amount of forward current.

In receiving side we use 3 types device

1. Photo diode
　　　　　　　　　　　　　　┐ Photo
2. Photo Transistor ┘ ~~Photo D.~~ │ sensitive
　　　　　　　　　　　Light Sensor │ Semicon
　　　　　　　　　　　　　　　　　│ ductors
3. Photo Darlington- Pair

o Photo diode is used for high speed operation and produce current by detecting light.

o Photo transistore provides moderate speed but higher output current.

o Photo Darlington-Pair is used for higher transfer ratio but lower speed.

Applications of Optocouplers:-

Opto-isolation is important where fragile digital circuits are at risk of being damaged by large transient volatage or spikes. Common application is in modem which allow the computer to connect with telephone line without risk of damage from the line transients. It occures digital isolations between ADC's and DAC's. It can switch power supplies.

[20/02] [Numerical]

~~[~~~~D~~~~R~~~~K~~~~T~~~~K~~~~T~~~~K~~~~T~~~~K~~~~S~~~~K~~~~M~~~~]~~

→ β forward Elim / Upper Triangle

→ Initial [Gauss] or Something (2nd method)
          ↑
        case

→ BDD/CDD   কোনটা Better, comparison

→ Non Linear or comparison কোনটা better

[5 theory / 15math] → Error বেড় করে নিতে
                      → Types অফ Error   → এতে লাগানে
                      → Sources of Error   যাবে না।

*Keywords ও ভূল হতে লাগ, ও careful.

→ Mid এ software design সম্পর্কে লেখা লাগবে না। Final এ লাগাবে।

Final এর জন্য

Flow chart দেওয়াও লাগবে।

***** অবান্তর কোন কথা লেখা যাবেন।
**

Mid II Peripheral

L→ 1, 2, 3, 5, 6

L 1 থেকে সে question দিয়েছিলো **

L1 → peripheral and Interfacing এর Definition

L2

Trans ducer
→ ৩ ধরনের Temp transducer এর comparison.

→ LVDT

L3 L5

Optocouplers/SSR এর configuration, diagram,
working principal

△ ও কোন Device দিয়ে problem টার solution

দেওয়া? Determine কর।

→ opto তে কোন সার্কিট দিয়ে আকবেন।

≫ কোন দিয়ে control করবে এ ঐ সার্কিট LED সাইজে

Q 2-6   DATA करायो? TEMPeratune CONTOROL
                            System.

** complete temperatue cuntorol
          System desing ?

→ consists of small desinge ओ
       list 1 कि कि करायो

     Simple schematic of tempratu
                    diagnam.

       Handware system desing

       MPU Block dignam..

   → final : softwane desing
        exams   flow chart

>> মোটা control হবে তাই opposite side এ
ক্ষ এর working principal তা হ দুইটা তোমাকে
শুব।

[L6] ****

→ Complete temperature control এ scenario
তোমাও।

   → Room

  -   → Engine Cooling

   → CPU cooling

   → etc.

→ Consist of small device এ কিছু Device
আছে।

→ Schematic temp control চিত্র Diagram (sample
        ?   Fig4)

→ Hardware system design with figure
            (Sample Pg-8)

Software

Lecture-2 → How a program/ software will be a product

Lecture-3 → Challenges, ~~Web~~ Web-3.0, 4IR

challenges গুলো কি কি?

→ Normal challege গুলো লিখবো। না।

lecture 4 → 32 no. slide এর Q টা ***

যেকোনো একটা বর্ণনা ethical value টা wedge করতে হবে।

Lecture 5 → How AI tech lead to a more sustainable future?

→ What are some of the most challenging aspects of changing a legacy sytem for a new one?

→ Slide no.26, [Draw Co diagram এর সাথে ব্যাসারাস UML আনতে কাজে]