P191311
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107 - Internal II.

1. Ardino uno
   - a) An Embedded system.

2. Pins to control servos -
   - c) PWM Digital pin.

3. Operating voltage of Arduino is.
   b) 7V - 20V.

4. Which of the following Microcontrollers present in Ardino uno?
   c) ATmega328.

5. Interface Ardino uno with a computer.
   c) USB port.

Part-B.

5. control LED (blinking on and off using Python.
   - we use a pin 13 which is a default LED.

Python code:

```
import serial, time
ser = serial('com4', 9800, timeout).
ser.write('H')
time.sleep(1)
ser.write('L')
time.sleep(1)
ser.write('ld')
time.sleep(1).
ser.close()
```

'com4' → serial port.

6 YANG modules

— Configuration data.
- It contains the configuration data of the device.
Ex: where is device placed, MAC no etc.
— State data.
— maintains the state of the device.
Ex: temperature, pin status etc.
— RPC.
— Remote procedure call to communicate with the servers.
— Data Exchange between NETCONF client and server.
— netconf client will be running in IOT device where as server will be running in data collector.
It specifies the protocol of communication.

2. Advantages of design methodology in IOT system.

— reduces complexity.
— time for design, testing is reduced.
— interoperability between IOT device and data collectors (services) improved.

3. Basic building blocks of an IOT device.

1. Sensors — most important part of the IOT device. It senses temperature, image, moisture etc and collects it.

2. Processors — It processes the collected / sensed data, convert into digital signal, process it, drop the information if it is useless and keep only useful information.

3. Gateways — It contains the information of the servers it has to send the collected data. It knows the protocol to send data

4. Applications. — which is the critical layer which processes all collected data, and make meaningful observation about it.

A. Raspberry Pi	Arduino Uno.
1. Faster than Arduino Uno.	slower compared to Arduino Uno.
2. Comes with an inbuilt Operating System (Linux).	no inbuilt operating System
3. 2 packs of GPIO pin.	20 GPIO PINS
4. Has more RAM.	RAM is less.
5. more powerful.	less powerful.