IIOT

ABBREVATIONS

1. **SMP –**
2. **SDN –** software defining network
3. **MANETs**
4. **IaaS -** infrastructure as a service
5. **RFID** radio frequency identification
6. **ISA** international soc of automation
7. CPS cyber physical sys
8. WoT web of things
9. M2M machine to machine
10. MQTT message queuing telemetry transport
11. CSMA-CA carrier sense multiple access w/ collision avoidance
12. CSMA-CD carrier sense multiple access w/ collision detection
13. ALOHA additive link on-line Hawaii area
14. LOADing localized & optimized ad hoc distance vector routing
15. AODV Ad hoc On-Demand Distance Vector
16. DSDV Destination-Sequenced Distance Vector
17. RIPv2 Routing Information Protocol Version 2
18. OSPF Open Shortest Path First
19. RPL - Routing Protocol for Low-Power and Lossy Networks

WEEK 0+1

1. **Pneumatic Actuators**: energy from compressed air into mechanical motion.
2. **SMP actutatos** : same as our muscles
3. **Paging op in bluetooth device**- forming a connection b/w 2 bluetooth device
4. **SDN** - Sensor n/w- take physical i/p -> digital i/p
5. An **IoT gateway** is a device - serves as an intermediary between IoT devices and the cloud or centralized IoT platform.
6. **MANETs** - These are self-organizing wireless networks where mobile devices communicate with each other without a fixed infrastructure .
7. **Fog computing -** extends the capabilities of cloud computing to the edge of the network, (users)
8. **IPv6 address** - unique identifier assigned to devices on an IPv6-enabled network. IPv6 (Internet Protocol version 6) - most recent version of the Internet Protocol. – 128 bits
9. **RFID**- uses radio waves to identify and track objects wirelessly.
10. **Zigbee** –
    1. **AODV used**
    2. wireless communication protocol
    3. low-power, short-range communication
    4. 4 layers
    5. operates on the IEEE 802.15.4 standard
    6. mesh networking to enable communication.
11. **DHT22**:
    1. Also AM2302,
    2. humidity and temperature sensor.
    3. can measure relative humidity from 0% to 100%
12. **HC-SR04**:
    1. ultrasonic distance sensor.
    2. uses ultrasonic waves to measure distance
    3. measure distances from 2cm to 400cm .
13. **TSL2591**:
    1. light sensor
    2. measuring visible and infrared light levels.
    3. often used in ambient light sensing,
14. **HC-SR505:** 
    1. passive infrared motion sensor.
    2. detects motion by sensing changes in infrared radiation
    3. commonly used in security systems
15. **ISA**: international society of automation
16. **Smart grid**- energy internet
17. **CPS**- integrated systems where computational and communication capabilities - intertwined with physical processes, creating relationship between the cyber and physical worlds.
18. **WoT** - concepts of the Internet of Things (IoT) by adding a semantic layer and web technologies
19. **Smart dust** – measure chemical in soil
20. **M2M** : Interactions through cloud computing
21. **IoT node**: connected to other nodes
22. **Gateaway** – router- cconnects iot lan to wan
23. **Proxy** : performs active application layer func b/w iot nodes
24. **Multi homing** :node connected to multiple n/w
25. **Transducer**- energy of one kind to another. Sensor+Actutators
26. **Sensor**
    1. Scalar & vector multimedia
    2. Sensor resolution : smallest change it can detect. More resolution, more precise
    3. Sensitivity error
    4. Offset error, bias: o/p differs from a constant from true val
    5. Hysteresis error: o/p depends on prev i/ps as well.
    6. Drift: o/p signal slowly changes
    7. Noise: random deviation of signal

WEEK 2

1. MQTT
   1. message queuing telemetry transport
   2. topic- string
   3. messaging protocol for communication between devices in low-bandwidth networks,
   4. particularly in Internet of Things (IoT) and machine-to-machine (M2M) applications.
   5. Connects publishers & subscribers
   6. Classify sensor data into topics
2. CSMA-CA
   1. protocol used in wireless networks to manage access to the shared communication channel and avoid collisions.
3. CSMA-CD
   1. manage access to a shared communication medium,
   2. coaxial cable or twisted-pair cable.
4. ALOHA
   1. random access protocol
   2. manage communication between multiple devices
   3. wireless channel or a shared bus in a network.
   4. Slotted ALOHA:
      1. time divided into discrete slots,
      2. Devices can only transmit at the beginning of a time slot.
   5. Pure ALOHA:
      1. time is continuous,
      2. devices can initiate transmissions at any time,
      3. higher collision rates
   6. Collision Detection:
      1. does not include collision detection
      2. relies on the devices to detect collisions
5. LOADing
   1. AODV used
   2. Localized and Optimized Ad hoc Distance-vector Routing
   3. designed for wireless ad hoc networks.
6. AODV
   1. Ad hoc On-Demand Distance Vector
   2. used in mobile ad hoc networks (MANETs).
7. DSDV
   1. Destination-Sequenced Distance Vector
   2. used in wireless ad hoc networks.
8. RIPv2
   1. Routing Information Protocol Version 2
   2. traditional IP networks, including LANs .
9. OSPF
   1. Open Shortest Path First
   2. used primarily in wired networks
10. IEEE 802 . 4 – low data rate WPAN
11. RPL - Routing Protocol for Low-Power and Lossy Networks
12. XMPP – extensible messaging presence protocol
    1. Open standard protocol – open source
13. 6LoWPAN – 64 BITS – extended
    1. 16- short
14. AMQP – FRAME
15. SCADA stands for Supervisory Control and Data Acquisition. It refers to a system used for monitoring and controlling industrial processes, infrastructure, and facilities in real-time.
16. DHT22 is a popular and widely used digital temperature and humidity sensor
17. A solenoid is an electromechanical device that converts electrical energy into linear motion or mechanical force
18. A relay is an electromechanical device that allows a low-power signal to control a high-power circuit or device