Cyber physical system 2m

1) Define CPS & its components?

Ans. CPS is a combination of two parts → cyber components & physical components

components

1. Information technology
2. smart grid
3. Blockchain & AI.

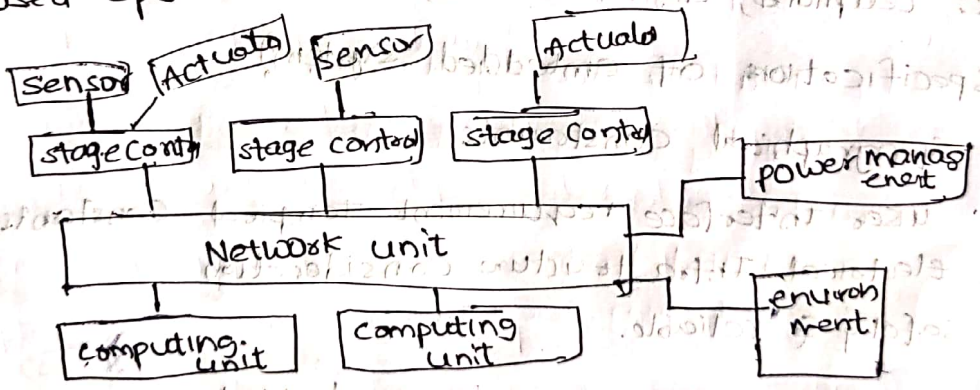
2) Define IIOT?

Industrial Internet of things. refers to extension & use of IOT in industrial sectors & application.

3) List few industry 4.0 technologies?

1. cyber security
2. Edge computing
3. AI & ML.
4. IOT.

4). proposed cps Architecture?



5) Classify IOT & IIOT?

IOT → it focuses on general Applications ranging from robots & machine

IIOT → it focuses on Industrial Application such as powerplant oil & gas

6) List few sensors used in Industrial Automation?

1. Temperature sensors
2. pressure sensor
3. MEMS sensors
4. Torque sensor.

7. What is smart transformation in business?

It is the process of deriving better business & outcomes by smart devices, big data, & ~~AIO~~ ;

8. Compare AR & VR?

AR	VR.
1. Combination of real & virtual worlds	1. it creates entire virtual world.
2. it remains in real world	2. transported into a new world.
3. Experienced by smartphones, Laptop.	3. experienced by VR headsets.

9. Define embedded systems?

An embedded system is nearly any other computing system other than desktop computer. An embedded system is a dedicated system which performs the desired function upon power up repeatedly.

Ex: cellphones, digital cameras, games etc.

10. Specifications of embedded system?

1. Geographical constraints
2. user Interface requirements temporal Constants
3. Electrical Infrastructure consideration
4. Safety & reliable.

11. Defined Abstraction Levels in embedded system?

1. Interpretation
2. Extension
3. Translation.

12. steps involved in developing an embedded system?

1. Requirement defination
2. system Specification
3. Functional design
4. Architectural design
5. prototyping.

13) components of embedded system?

three components: 1. hardware
2. Application specific software
3. real time operating system.

14) Techinques of decentralization ~~feedback~~ system Architecture

1. Automatic production plan Generation
2. production plan validation
3. Decentralized ~~control~~ Two stages consensus.

15. Discuss cyber physical hardware platform?

→ The europian project, three year program & recieved million euros for system design. Because most existing simulation tools for complex cps only efficiency parts of system.

16. Define, processor, sensors, Actuators?

Processors:

communication processors are processors with specific optimization to support communication system. Based on Applications such as audio, video.

Sensors.

* sensor is a device which detect & responds to some type of inputs from physical environment.

Actuators: An Actuator is a device that produces a motion By converting energy & signal going into the system.

17. How does Real Time Operating system works?

RTOS is a operating system with two key features. predictability, determinism.

* Repeated tasks are performed within timeBoundary.

18. Types of sensors.

* Smart sensors
* Biosensors
* Temperature
* pressure
* chemical

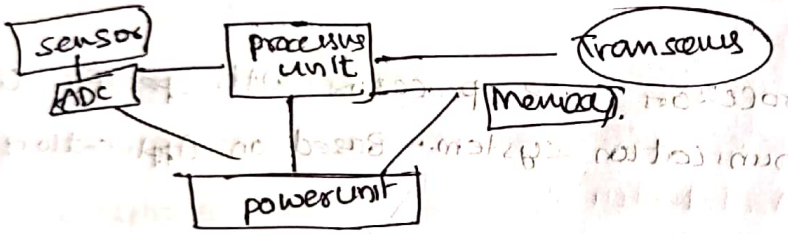
19. State distributed system.

* A distributed system is a computing environment in which various components are spread across multiple computers on a network.

20. Application of WSN.

* IoT
* Surveillance & threat detection
* Landslide Detection
* Noise Level of surroundings
* Agriculture.

(21) Explain sensor node with components.



(22) classify multiply Access protocols.

can be broadly classified into three categories

1. random Access
2. controlled Access
3. channelization Access

(23) Real-time protocol communication?

It is a category of software protocols & communication hardware media that gives real time guarantee which is necessary to support real time computing.

(24) what do you mean a micro sensor?

it is a electronic device that detects information about a specific variable such as temperature or light