1) Define IOT?

→ *IOT is a technology or transition in which devices will allow us to sense & control the physical world by making objects smarter & connecting them through an intelligent network.

* It allows for improvements in efficiency, accuracy, automation & enablement of advanced application.

* Connect the unconnected.

2) Discuss the evolutionary phases of IOT

→ * First phase :-

* Connectivity began in mid 1990

* Email & internet were considered as luxuries for companies & corporations

* Dial-up modems & basic connectivity were considered

* Connectivity & speed continued to improve, connectivity was not a major challenge.

* Second phase :-

* Began with network economy

* E-commerce & digitally connected supply chains became rage & caused disruption

* Online shopping got incredible growth

* Vendors & suppliers became closely networked with producers.

Third phase:
* Emergence of social media, collaboration
* Use of multiple platforms from mobile, tablets, laptops & desktop.
* Enable communication & collaboration as well as social media across multiple channels via emails, texting

Fourth/Last phase:-
* 99% still things are not connected
* Machine & objects in this phase connect with other machine objects along with human
* Business & society have already started down this path & expanding huge ↑ in data & knowledge.

3) Differentiate b/w IOT & digitalising.

IOT:-
* It focuses on connecting "things" such as objects & machines to a computer network.
* Ex:- In a shopping mall where wi-fi location tracking has been deployed, here the things are "wi-fi",
It helps in knowing where a consumer is in a retail environment through his (or) her smart phone connects to the retail wi-fi network
* It helps the business to understand the shoppers and that how much time they spend in different part of mall
* Analysis of this data can change the product display & advertising place.

Digitalization:-
* It is defined as the conversion of information into a digital format.
Ex:- Photography industry in digital camera instead of the phone camera
* Before people want to store to buy CD but now it can be download
* Transportation industry in taxi, ola where it can be driver be seen, fare etc
* It also includes home automation like cc camera etc
* It mainly aims to bring data & business together.

4) what are the various challenges that are addressed by the connected car

* Safety:- * According to US department of transportation, 5.6 million crashes were reported in 2012 alone
* IOT & the enablement of connected vehicle technologies will empower drivers with the tools they need to anticipate potential crashes & significantly reduce number of these last.
* IMA (Intersection Movement assist) is possible
* Vehicle tracking → notification of arrival time, theft prevention (or) highway assistance

extra
* Road weather communications
& data from satellite, roads & bridges to warn vehicle of dangerous conditions

Mobility :- * connected vehicle mobility applications can enable operators & drivers to make more informed decisions, which can reduce travel delays.
* Reducing travel delay is very important
* communication b/w mass transit, emergency response & traffic management infrastructure help optimize the routing of vehicles.

Environment :- * according to American public transport association, each year transit systems can collectively reduce CO_2 emmision by reducing private vehicle miles.
* connected vehicle environmental applications will give all travelers the real-time information they need to make "green" transport choice.

3) List out the challenges faced by the manufacturing factory & explain the 4 industrial revolution.
→ * evaluating new product & service introduction to met customs & market opportunities
* Increasing plant production, quality & uptime while decreasing cost
* Migrating unplanned downtime
* securing factories from cyber-threats
* Jr. High capability & recabling cost
* Improve worker productivity & safety

Industrial revolution :-

Industry 1.0 :- * Mechanical assistance (late 18th century)
* Basic machine powered by water & steam are part of production facilities.

Industry 2.0 :- * Mass production (Early 20th century)
* Division of labour & electricity lead to mass production of facilities

Industry 3.0 :- Electronics & control (Early 1970)
* Production is automated further by electronics & IT

Industry 4.0 :- IOT Integration (Today)
* sensors with a new level of Inter connectivity are anticipated.

6) With a neat diagram explain the conversion of building protocols to IP with suitable example.
* Motion detection occupancy works great if someone is moving around in a crowded room & automatically shut the lights when everyone leaves the room.
* sensors are used to control heating, ventilation & air-conditioning, temperature sensors are spread throughout building to control of air flow into room

* The building automation system has been deployed to provide single management system for HVAC, lighting, fire alarm etc
* The communication protocol responsible for building automation is BACnet (Building automation & control network)
* It defines a set of services that allows ethernet-based communication b/w building devices.
* The digital ceiling is more than just a lighting control system
* LED offers low energy consumption & longer life this allow them to run on power over Ethernet (POE)
* In a digital ceiling every lighting fixture is directly network attached. which is managed by IT network, supporting voice, video & other data