Assignment - 3

① Explain the transport protocol and Explain each with an example?

(A) Two protocols that enable transport are the traditonal blue tooth low energy (BLE) and light fidelity (Li-Fi) has become incriable in moden IOT era.

Blue tooth low energy :-

Blue tooth low energy (BLE) is an open low energy short range radio communication technology. It is called blue tooth smart. The protocol is designed by bluetooth special internet Group (SIG). It is a wireless personal area network technology, similar to blue tooth. BLE can be considered as an advancement of the earlier of blue tooth

Blue tooth.

4 x (B)

low energy

BLE has energy reduced Power Consumption as compared to classic bluetooth. The application prospects are immense and BLE has dominance following:

* 1) Health Care
2) Entertainment
3) Fitness (in the form of smart watches)
4) Proximately

BLE is support to classic bluetooth because it has the advantage of saving Power. In addition BLE is supported by Android, IOS, Battery etc thus making it easier to use it with any mobile as Moreover BLE is supported by MacOS, windows 8/10 and linux Variants. BLE is superior to classic bluetooth because it has advantage of saving Power. In addition, BLE is supported by Android, IOS, Battery etc thus making it easier to use any mobile OS Moreover, BLE is supported by MacOS.

* It is license free and hence doesn't add any costing related overload to the system.
* There is no restriction with respect to manufacturers. Any system manufactured by manufacture is BLE

② what is principle and advantages of lifi?

① Now-a-days too many devices are connected to the internet, and it has become a labyrinth of internet connection everything any anything from watches to the water heaters is connected to the internet. There are some concerns added to consumption of internet which are as follows:-

* light fidelity is believed to be one of the solutions to above concerns. Lifi shown in and one of the test runs Proven to project a stunning speed of 224 GB data and Lifi has a phenomenal speed of 224 GB Plsec & it is fastest.

In Lifi, light is used to as a medium to transfer / data. It doesnot require any special equipment that should be pt expensive to achieve the target. The light (bulbs) which is in the office / homes is sufficient, but with some minor modification to facilitate data trange in the office / homes is different but with some miner modification to facilitate data transfer.

Advantages:-

Some of the advantages of lifi are

1) Since light cannot pnetrate through walls, it extremely safe and no data hijacking as happen, which is a short coming with wi-fi.

2) Efficient.

3) Lifi is the fastest and is expected to break all previous records.

4) It is an effective alternative RF.

* Data is limited over lifi by

modulating the intensity of the light (or) turning it on at a very high speed.

2) The modulation process happens real quick and human eyes cannot really feel (or) capture it.

3) The light is recieved by photo dectertator and demodulation generate the data stream sent by transmitter.

4) All the LED lamps need an LED lamp drivers.

5) the lamp drivel gets information from the seiver and enceding occur here.

6) After this, LED illumination takes places.

(3) what is Internal protocol? Explain different classes in IPV4?

(A) Internet protocol is topic of significance relevent to computer networking. Any code in the network is uniquely identified by an address similar is the case in an IOT information. IOT has many equipment in the network and each should be identified by an

IP address serves this purpose.

IPV4 Protocol format :-

Every protocol has its own format and IPV4 is not an exception. Figure 4.4 represents the protocol format of IPV4. It is important to understand all the fields of IPV4.

* IP Version Number :-

It is a half a byte field which indicates the version of IP being utilized. The field has value 4 binary (0100). The basic idea of using their Version field is to ensure compatability between the various of IP that might be used in the next works.

2) Internet Header length :-

This length specifies that internet header length is 32 bit words and points to be beginning of the data. The minimum value for a correct header is 5

3) Type of services :-

This length specifies that Internet header length is 32 bit words and points QOLS can be procedure, delay & reliability. The 8 bits are framed shown in figure.

The type of services field is composed of 8 bits these as follows.

A procedure bits 0 and 2 represent Procedure, which has further options as shown in figure.

* Delay :- This is the 4th bit and it indicates the delay. Here '0' indicates as a normal delay and 1 indicates a lower day.

* 0 indicates normal reliability and 1 indicates high reliability.

* This is 16 bit field which defines the length of IPV4 data gram.

(4) Explain about layout of IPV6?

(A) IPV4 is being predominantly used in network field. But due to extreme growth in number of computers and internet devices the address got exhausted and there was need for more address for utilization. This is primary reason for development of IPV6.

* IPV6 was developed to overcome the difficulties of IP address is the main challenge with IPV4 is just 4 bytes wide and provides room 2^32 unique IP adress, which was not sufficient to meet the demand for increased ip address due to increase in no of devices connected to Internet.
* IPV6 Provides support for 2^128 unique/ address, which is substantial increase in no of computers that can be addressed.

* In addition to more number of IP address, IPV6 also provides the following features :-

* It has much better and efficient routing.

* IP sec forame work is mode mandatory in IPV6, which is not IPV4. This increase the security.

* An additional flow label is added to in the header of IPV6 which can improve QoS.

* IPV6 supports new applications such as IP technology, videos/ audio, interactive games etc.

* Plug & Key abilities have been improved in IPV6.

* IPV6 has eliminated the need for network address translation due to huge available of IP address.

*

IP version (6)	Traffic class	Flow label
Payload (16)	Next header (8)	Hop limit (8)
Source Address (128 bits)		
Destination Address (128 bits)		

Version (4 bits) :-

This is used to represent the version of IP being used. In IPV4 is it and in IPV6.

(5) Explain the importance of MQTT protocol with IOT infrastructure?

(A) If you play in the IOT space, you may have heard the MQ telemetry transport (MQTT) protocol. In addition to being used as an underlying Communicatio Protocol for IOT & industrial IOT architectures. MQTT is used in smart home automation system along side Cloud Platforms such as Microsoft Azure AWS & BWM

The Industrial Internet of things (IOT) Can be loosely difined as a system of sensors and other devices interacting with Industrial & manufacting systems all in effort to enhance bussiness operations. Industries like manufacturing, mining, oil & gas, agriculture, agribusiness, to name just a few, deploy massive number of sensors. These sensors in turn send Critical telemetry data to Analysis engines where the data is Analysed for trends and/ anomalies to questions. In environment using low Power mode Area network (LPWAN) Solutions, Sensor or data is sent over wireless radio transmissions where it is used recieved by one (or) more central basic stations This data, Small as Individual pockets. But massive when aggregated together is then sent to Analytics and Visualization tools wheather

in the cloud (or) non-premisis.

That's where MQTT comes in residing on top of TCP/IP network residing on the top the TCP/IP network stack/MQTT is a light weight publish/subscribe messaging protocol/ designed for low band width, high latency, unreliable networks "MQTT" features make it an excellent option for sending high volumes of sensor messages to analytics plat forms & cloud sections

(6) what is uniform resource identifier?

(→) A uniform Resource identifier is a character sequence that identifies a logical (or) physical Resource usally, but not always connected to the internet A URI distiguishes a resource from another.

URI's enable protocols to facilitate interactions between and among these resources. The string of characters incoopriated in a URI sure as identifiers, such as a scheme name & a file path.

In the URL, the file path may be empty.

A uniform resource locator is (or) web address is the most common from of URI. It is used for unambiguosly identifing and locating websites (or) other web connected resources.

A URL provides a simple, intersible way to identify internet resources. thanks to uniformly that URI Provide.