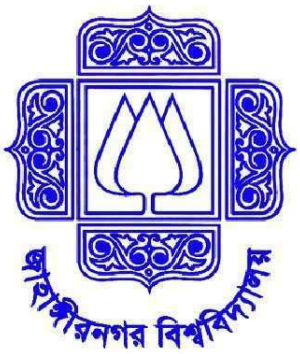
JAHANGIRNAGAR UNIVERSITY

Institute of Information Technology (IIT)



CLASS TEST 1
PMIT 6217 WIRELESS NETWORKS
Summer Semester 2023 Intake
Date of Examination: JULY 25, 2023

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1ST Trimester Regular Batch
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Regular Batch

@ Radio waves propagate through space as travelling electromagnetic waves. The energy of signals exists in the form of electrical & magnetic fields. Both these fields differs sinusoidally with time. The two fields always exists together because a change in electrical fields generates a magnetic field & a change in magnetic field develops an electrical field. Thus there is continious flow of energy from one field to the other.

Radio waves have high frequencies. These waves have the ability to propagate through atmosphere from transmitter to receiver via antenna. These waves can travel directly or after reflecting earth's surface to troposphere surface. Basically it contains with very high frequencies. But it contains some limitations like these waves are limited to the curvature of the earth. or the line of sight distance.

If anyone wants to increase the transmission distance then, this can be done by simply extending height of border & receiver antena. So, in the final term

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We can say these basically depens on direct, ground reflected & [redacted] troposphoric waves.

⑥ Wireless network basically uses the radio waves to connect devices like laptop to internet the business network & applications without necessity of cables or wires.

commony used wireless network devices are: sensor, embedded controllers, portable computers, pager, personal digital assistants (PDA), desktop computers, cellular phones etc.

Among of them.

① Sensors:- A very simple wireless device is represented by a sensor transmitting state information: For example:- A switch sensing the office door. If the door is closed, then the switch transmits this to the mobile phone inside the office. without user interaction. the semantics of a closed door is applied to phone calls.

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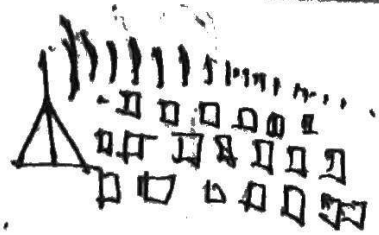
(2) PDA :- Another one is PDA that refers Personal digital assistant. It is a handheld PC a variety of mobile device which functions as a personal information manager. It was designed to replace non-electronic day planners. Many of them work as an address book, clock and a calendar. Some also have games. Newer PDA's are known as smartphone have touch screen & wi-fi which can record video, read e-mail, also make phone calls.

(3) Limitations of wireless networks.

(i) signal loss or attenuation.
(ii) interference
(iii) absorption wireless network.

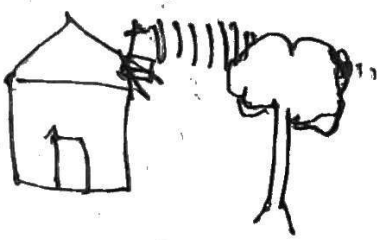
While working with wireless equipments the 6 scenarios that represent challenges or problem are given.

(i) Distance:- Wireless signal lose power the further they travel no matter the type of antennas.

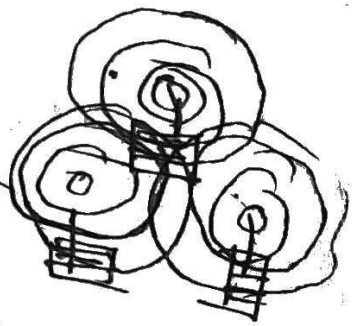


(ii) Line of sight:- Wireless signals can encounter total barriers, preventing connection.

(iii) Barriers: Wireless signals lose signal strength through solid objects.



(iv) Interference: Routers could be too loud, making it impossible for them to hear each other.



(v) Weather: Weather conditions can disrupt wireless signals.

(vi) Electrical power issues:- Routers need steady electricity to work correctly.

(d) ~~802.15.4~~ IEEE 802.15.4 standard refers ZigBee:. ZigBee is a low-power, low data rate close proximity (for example: personal area) wireless ad-hoc networks targeted towards ~~auto~~ automation & remote control application.

The unlicensed bands including 2.4 GHz at a maximum transfer rate of 250 Kbps. (915 MHz in USA or 868 ~~MHz~~ MHz in Europe Bands). The data rate is 40 Kbps at 915 MHz. & 20 Kbps at 868 MHz.

Typical ~~too~~ application areas include:-

- Home automation
- wireless sensor networks.
- Industrial control systems
- Medical data collection.
- Building automation
- Smoke & ~~water~~ intruder warning
- Embedded sensing.
- Remote wireless microphone configuration