

CS 718-Past Final Term Papers

By Imran Ullah Gondal (ms150200602)

Q. 1 ending procedure of pick net

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In the case that the PNC abruptly leaves the piconet without handing over control to another PNC capable DEV in the piconet, the piconet stops operation.

After the association timeout period (ATP) expires, a PNC capable DEV from the old piconet will be able to start a new piconet using the normal process,

In the case of dependent piconets, the parent PNC is able to end the dependent piconet via the Disassociation Request command,

Q. 2 no of nodes in pick net

Q. 3 registration process of Mobile IP

➔ The process of registration requires 4 steps:

1. Mobile node request forwarding service by sending registration request to the foreign agent.
2. Foreign agent relays this request to the home agent.
3. Home agent accepts or denies the request and sends registration reply to the foreign agent.
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Q. 4 pros n cons of SPIN and direct diffusion

Q. 5 factors effecting reliability in WSN

Radio techniques, scalability, QoS, security, Ease of Use, Mesh connectivity

Q. 6 architectural diagram of WSN



Q. 7 conceptual question networking suggestion

1. describe Security Goals of IEEE802.11 Security? (5)

Goals of 802.11 security

- a. **Access Control**
 - i. Ensure that your wireless infrastructure is not used.
 - b. **Data Integrity**
 - i. Ensure that your data packets are not modified in transit.
 - c. **Confidentiality**
 - i. Ensure that the contents of your wireless traffic is not learned
- 802.11 security consists of two subsystems
- d. A data encapsulation technique called *Wired Equivalent Privacy* (WEP)
 - e. An authentication algorithm called Shared Key Authentication

2. Active and Hold mode of Bluetooth devices? (5)

3. comparison of Contention based protocol and TDMA?(5)

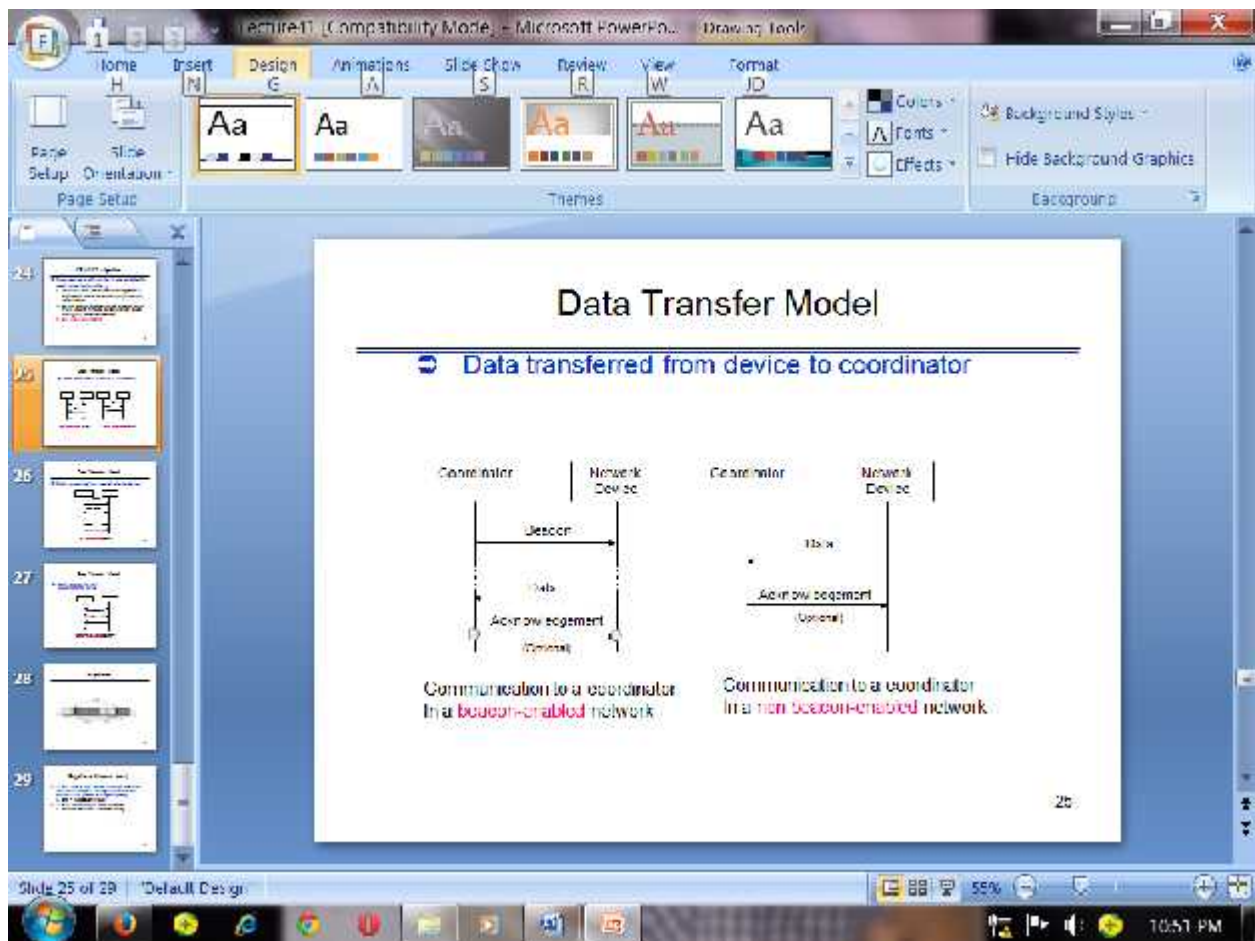
4. Given network A, B, C that are connected to the Internet. A client of C starts communication with client of A. during session client of A moves to network B. explain with diagrams the given scenario and how will it possible ti maintain session while all the three network A, B, and C are connected to the Internet. Explain with diagrams and label entitles? (10)

5. Power Saving techniques for high rate WPAN.?(10)

6. Give Three reason each for non-suitability of TCP and UDP for WSN.(10)

- ⊖ Higher overheads for short data transmissions.
 - ⊖ Flow and congestion control cause unfair bandwidth for farther nodes.
 - ⊖ Throughput degrades under wireless due to higher packet losses.
 - ⊖ End-to-end congestion needs longer time to mitigate congestion, causing more congestion to occur.
 - ⊖ End-to-end reliability consumes more energy and bandwidth than hop-by-hop.
 - ⊖ Packet-based reliability, which is not required for event-driven applications
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- ⊖ No congestion control
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7. Give architecture diagram of ZigBee / IEEE 802.15.4. How data is transferred from coordinator to device and device to coordinator in this with the help of diagram.?



My cs718 paper fall2015 final term 01-March 2015

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CS718 25 March at 2:00 PM

- 1- What are the critical issues in mesh network?
- 2- What is ZigBee Protocol? Explain the diagram of routing in zigbee?
- 3- Bluetooth core specification and profile specification?
- 4- what is Piconet? it support minimum number of devices?
- 5- Why TCP protocol is not suited for WSN?
- 6 Which protocol is used in WMSN?

CS718 March 2014

Q1:Differentiate between Inter-Mode and Intra-Mode Handover in WCDMA .5

Q2:Differentiate between ad-hoc networks and cellular networks. 5

Q3:In Bluetooth, a device can be associated in two piconets at the same time. Is there any reason why one device cannot be the master in both of them at the same time? 5

Q4:Why IEEE 802.11 standard cannot be used for broadband wireless MAN and needed to develop a new standard IEEE 802.16? 10

Q5:Categorize and discuss the basic types of traffic data access in WCDMA. 10

Q6:Mobile IP was intended to work with legacy correspondent hosts and legacy applications. However, some advantages may be gained if correspondent hosts are aware of mobility in certain ways.

If a correspondent host is able to do IP-in-IP decapsulation, it may be able to communicate more efficiently with the mobile host despite the presence of ingress filtering. Why?

If a correspondent host is able to maintain a mapping between a mobile host's local IP address and its home IP address, and receive updates to that mapping from the mobile host, it may be able to communicate more efficiently with the mobile host than is possible with standard Mobile IP. Why?

Q7:Differentiate between core specification and profile specification in Bluetooth.

Q8:What are the power saving techniques in High rate WPAN? 10

Q9:Which QoS classes are defined in WiMAX? Write the possible application and their related parameters to specify QoS. 15

CS718_Final Term_Fall 2014

1. inter-mode and intra-mode in wcdma
2. major capabilities for mobility in mobile ad hoc networks
3. 802.15
4. 802.11 and 802.16 difference
5. major characteristics of Bluetooth
6. difference between zigbee and Bluetooth
7. why do we need broadband wireless access , architecture diagram of Wimax

CS 718 WN Paper

Q. No.1: 802.16 burst types and downlink services.	5
Q. No.2: GPSS and GPC difference	05
Q. No.3: 8032.15.3 Superframe by diagram channel time division	15
Q. NO.4 : Contention based and TDMA protocol difference	05
Q. No.5: WSN MAC , 4 Routing and 3 transport protocol types.	10
Q. No.6: Difference b/w WMN and MANET	05
Q. No.7: By diagram show interspacing SIFS, PIFS, DIFS and AIFS	10
Q. No.8: One question about TCP time issues in TCP.	05
Q. No.9: Message distribution in ESS	10

1. Difference between 802.11a vs 802.11b. (5)
2. Ad-hoc vs. Cellular network. (5)
3. S-MAC drawback in WSN (5)
4. Overview of WiMax (5)
4. Traffic Data access in WCDMA (10)
5. characteristic of ad-hoc and future challenges (10)
6. Factors involving in Sensor network designing (10)
7. Overview of WIMAX (10)
8. WPAN support Contention based and contention free access, Write a Algorithm for both. (15)

CS718 Final Paper 2015 Total Marks = 75

4 Questions of 5 marks

**4 Question of 10 marks
marks**

1 Question of 15

Time Allowed = 180 minutes

Question No. 1. (5 points) (From Lecture 23)

Differentiate between Inter-Mode and Intra-Mode Handover in WCDMA?

- Intra-mode handover
Include soft handover, softer handover and hard handover.
- Inter-mode handover
Handover to the UTRA TDD mode.
- Inter-system handover
Handover to other system, such as GSM.

Question No.2. (5 points) (From Lecture 28)

Differentiate between ad-hoc networks and cellular networks?

- Ad hoc networks
 - infrastructureless
 - multiple hop
 - Radio power limitation, channel utilization, and power-saving concerns

DCF(distributed coordination function)

- Cellular networks
 - infrastructure-based
 - one hop(uplink or downlink)
 - PCF(pointed coordination function)

Question No.3. (5 points) (From Lecture 34)

Discuss the current challenges in WSN?

- Cross-layer approach: A Grand Challenge

Traditional layered approach is not suitable for WSNs

Good for design, abstraction & debugging

Bad for energy efficiency, overhead &

- How to realize mapping?
- User/Applications Requirements →
 - Arch. & Topology or Communication Protocols
 - E.g. reliability ?

Question No.4. (5 points) (From lecture 42)

Give comparison of 802.11 and 802.16?

Comparison 802.11 and 802.16

Technology	802.11	802.16
Range	< 300 feet	< 30 Mile (typical 3~4)
Coverage	Optimized for indoor short range	Outdoor LOS & NLOS
Data rate	2.7 bps/Hz peak. <= 54Mbps in 20MHz	5bps/Hz peak, <100Mbps in 20 MHz
Scalability	1-10 CPE CSMA/CA	1- hundreds CPE TDMA
QOS	No QOS	On demand BW → voice Video, data

Question No.5. (10 points) (From lecture no 23)

Elaborate the compressed mode measurement and classify its methods?

- The compressed mode is needed when making measurement from another frequency without full dual receiver terminal.
- The intention is not to lose data but to compress

The transmission and reception are halted for a short time to perform measurements on the other frequencies

- Three methods for compressed mode:
 - Lowering the data rate from higher layers because they have knowledge of compressed mode schedule.
 - Increasing the data rate by changing the spreading factor.

Reducing the symbol rate by puncturing at the physical layer multiplexing chain but limited to rather short Transmission Gap Lengths (TGL)

Question No.6. (10 points) (From lecture 31)

Elaborate the critical factors influencing the network performance in WMN?

- Radio techniques
 - Directional and smart antennas
 - MIMO systems
 - Multi-radio chipsets
 - More advanced techniques such as reconfigurable radios, cognitive radios
 - These require revolutionary design changes in higher layers
- Scalability
 - Multihop routing is common in WMN, which degrades performance.
 - IEEE 802.11 MAC is not scalable and throughput significantly reduces as number of hops increases to 4 or higher
- Mesh connectivity
 - Network self-organization and topology control algorithms are needed
- Broadband and QoS
 - Different from ad hoc networks, most applications of WMN are broadband services with various QoS requirements.
- Compatibility and inter-operability
 - Network access to both conventional and mesh clients
- Security
 - No centralized control
- Ease of use

Question No.7. (10 points) (From Lecture 35)

Describe traffic adaptive MAC protocol with its advantages and disadvantages?

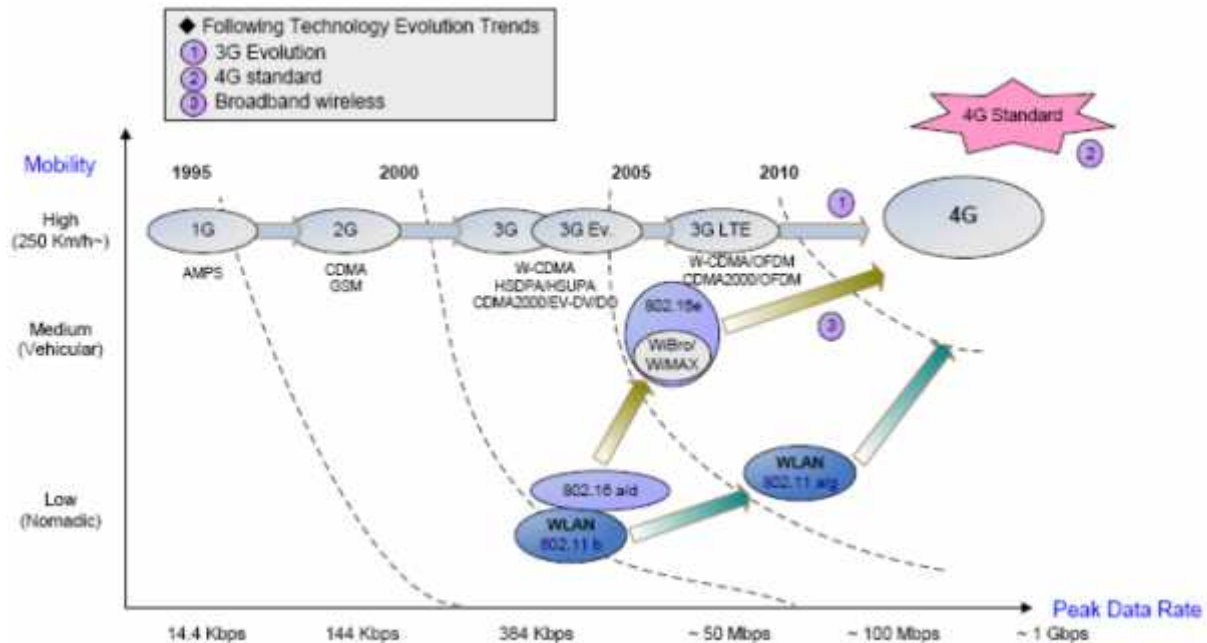
- **Advantages**
 - Higher percentage of sleep time and less collision probability are achieved, as compared to CSMA-based protocols.
 - Since the intended receivers are indicated by a bitmap, less communication is performed for the multicast and broadcast types of communication patterns, compared to other protocols.

➤ Disadvantages

Transmission slots are set to be seven times longer than the random-access period. This means that without considering the transmissions and receptions, the duty cycle is at least 12.5 percent (idle time),

Question No.8. (10 points) (From lecture No 44)

Discuss evolution of 4G with the help of diagram and discuss its issues?



Question No.9. (15 points) (From lecture 40)

Give IEEE 802.15.3 Super frame format and discuss its parts super frame # in detail with its format?

The beacon

- Which is used to set the timing allocations and to communicate management information for the piconet.

The contention access period (CAP)

- Which is used to communicate commands and/or asynchronous data if it is present in the superframe.

The channel time allocation period (CTAP)

- Which is composed of channel time allocations (CTAs), including management CTAs (MCTAs).

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Microsoft PowerPoint interface showing a slide titled "Data Transfer Model".

Data Transfer Model

➡ Data transferred from device to coordinator

```

sequenceDiagram
    participant ND as Network Device
    participant C as Coordinator
    ND->>C: Buscan
    C-->>ND: Data
    ND-->>C: Acknowledgement (Optional)
    
```

Communication to a coordinator
in a **buscan-enabled** network

```

sequenceDiagram
    participant ND as Network Device
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```

Communication to a coordinator
in a **non-buscan-enabled** network

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