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**Final Term Exam ,**

**Course: - Mobile Computing**

**Deadline: - Mentioned on SIC**

**Marks: - 50**

**Program: - BS (CS), BS-SE**

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**Class and Section: BS(SE) SECTION B 8 Semester**

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**Q1: Provide the names of 4 challenges that exist in Adhoc Networks.**

**(4)**

**Answer:**

There are many challenges in Adhoc networks that is :

- Dynamic topology is the challenges where nodes are un engaged to move which ends up in route changes and packets loss.
  - Scalability remains unsolved challenges embody routing ,confirmation , management ,ability etc...
  - Ease of snooping on wireless transmission (Security hazard ).
  - Energy constraint limits process power ,ad-hoc network rely on every node being a router
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**Q2: How the nodes in the Adhoc Network know about the changing network topology. (2)**

**Answer:**

Ad hoc incorporate set of mobile nodes connected wirelessly during a self - organized healing, network while not having a set infrastructure Manet nodes are liberated to move indiscriminately because the network topology changes often. Every nodes behave as a router as they forward traffic to other specific node within the network.

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**Q3: Why is it important to minimize flooding of control packets in Adhoc Networks and how MPR achieves it? (4)**

**Answer:**

In an Optimized Link State Routing (OLSR)-based Adhoc network, optimizing the flooding of broadcast messages is a challenging task due to packets mobility and bandwidth resource consumption. To complement existing solutions to this problem, the Multi- Point Relays (MPR) selection has recently been advocated as a promising technique that has an additional feature of reducing the number of redundant re-transmission occurring in the network. This paper continuous on the investigation of an existing MPR -based solution, arguing that by considering a cost factor as an additional decision parameter in selecting the MPR nodes, the enhanced MPR selection algorithm leads to less packet loss in the network. Simulation experiments are presented to validate the stated goal, using the average packet loss ratio as the performance metric

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**Q4: Explain briefly how Mobile Cloud Computing is different than simple mobile computing and simple cloud computing? (4)**

**Answer:**

Mobile cloud computing (MCC) is simply cloud computing in which at least some of the devices involved are mobile. This paper goes over multiple techniques and methods for mobile cloud computing. It explores both general-purpose mobile cloud computing solutions and application-specific solutions. It also discusses instances of mobile cloud computing where mobile devices serve as the cloud rather than the client. Simple Cloud computing is the trend in which resources are provided to a local client on an on-demand basis, usually by means of the internet.

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**Q5: Explain the term MBaaS in your own words?**

**(4)**

**Answer:**

**MBaaS** stands for Mobile Back-end as a Service. It is a model that provides web app and mobile app developers a way to link their app to the back-end cloud storage. Cloud storage is a data storage model that stores digital data as logical pool.

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**Q6: Imagine you visit a completely new city. What kind of services a modern LBS can provide you at your location automatically?**

**(6)**

**Answer:**

Location-based services (LBS) use real-time geo-data from a mobile device or Smart phone to provide information, entertainment or security. Some services allow consumers to "check in" at city.

Location-based services use a smart phone's GPS technology to track a person's location, if that person has opted-in to allow the service to do that. After a smart phone user opts-in, the service can identify his or her location down to a street address without the need for manual data entry.

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**Q7: Use your imagination as to how the following context can be used by a context aware application in mobile computing environment?**

**(8)**

**Answer:**

**Date/Time**

The date/time is important in a user environment such as when the person enters in office and when he leaves and also use for reminding some important work by mentioning date and time.

## **Environment**

In context environment the application when student entry in the class the mobile automatically switch to silent mode and when he leave the class it back to normal mode.

## **Emotional state**

According to context aware system emotional state of user can effect mobile computing environment for example .A loud alert is not ideal for all situation in the same way language change colour should be according to the user.

## **Focus of attention**

The system should give important to the attention of user through context aware system can provide some services like in the phone call avoid unnecessary interruption or when the message arrive on the phone flashes a notification in every 30 second.

## **Orientation**

Orientation means the context aware system have capability to provide user device to adjust the screen in every change fro example auto rotate mode in smart phone

## **User preferences**

The context aware system maintain the user preferences by providing the user with certain option such as in the mobile phone color density control.etc

## **Calendar (events)**

The context aware focus on the system timezone and global date this way the user personalize calendar and keep track of the events

## **Browsing history**

The context aware of browsing is when system off due electricity or some other issues the system browsing system the history or automatically restore the recent pages.

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**Q8: Explain why energy efficiency is important in technologies like Bluetooth and ZigBEE?**

(4)

**Answer:**

**Bluetooth:** is the most common connection method between two portable devices. It is usually found in vehicles, connecting the phone with the audio system, Therefore, a significant number of Bluetooth communications are likely to be found near the road network. Bluetooth's advantage is the usage of frequency hopping that continuously search for free channels to be used in data exchange. This ensures the successful data exchange, but the communication time depends heavily on the frequency band congestion.

**ZigBee:** is an uncommon technology to be used for vehicle communications, as it was designed for smart home device networks, being capable of fast data transfers (at low data rates) between a substantial number of devices. ZigBee may use fixed channels, that may be chosen far enough from usual in 2.4 GHz frequency band.

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**Q9: Explain briefly how you use RFID technology at INU on a daily basis when present on the campus? Do you use an active or passive tag?**

**Answer:**

The INU RFID technology System is working as follows:

First Reader (teacher) detects RFID card and forward that ID to micro controller. Micro controller authenticates the ID and generates a specific number (4 or 5 byte code)(Students) against that ID. This specific number is then forwarded to the ZigBee transceiver via serial link from where it is broadcasted to receiving nodes. One of the receiving nodes is the database server where attendance record is managed. At the same time control circuit node receives the broadcast and automates the office equipment based on that specific profile. The profiles can be modified from the server as they are stored in NVRAM.

**Passive tag RFID system:** We will use RFID for item tracking at INU on daily basis when present on the campus. We will use active RFID for item tracking because it requires low signal strength and high range passive,

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**Q10: Explain how Wearable Computing can be employed in computer gaming? (5)**

**Answer:**

Wearable computers can be used as gaming computers as some of the products are available in the market which can be worn and used to play games. VR headsets are the best example for wearable gaming computers. These types of technologies use gyroscopes and tracking sensors for a better gaming experience.

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**Q11: What kind of facilities and technologies must be present in order to call your own home a Smart Home?**

**Answer:**

Smart Home, referred to as "Smart Home Technology", is the use of technology to enhance your home. Smart home allows you to control almost every aspect of your home through the Internet of Things (IoT).

Having a smart home means connecting most of the electrical appliances to a mobile phone such as fridges, air conditioners, water pumps, electrical appliances such as medical instruments like blood pressure set, steaming and exercising machines. Connecting mobile phones means that it can be easily accessed from any place through the internet. Having a smart home is much safer and easier life.

**End of Paper**

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