

*19.12.21*

**University of Barishal**  
**Department of Computer Science and Engineering**  
**Course Title: Mobile Computing**  
**Course Code: CSE-4225**  
**4<sup>th</sup> Year 2<sup>nd</sup> Semester Final Examination**  
**Session: 2015-2016**

**Time: 3 Hours**

**Marks: 60**

**N.B.:** Answer any **FIVE** questions out of the followings. All parts of each question must be answered consecutively. Right side of the question shows the maximum marks.

**Q1.a)** *Mobile Computing a technology that allows transmission of data, via a computer, without having to be connected to a fixed physical link.* 6

*The term "Mobile computing" is used to describe the use of computing devices, which usually interact in some fashion with a central information system--while away from the normal, fixed workplace. Mobile computing technology enables the mobile worker to create, access, process, store and communicate information without being constrained to a single location. By extending the reach of an organization's fixed information system, mobile computing enables interaction with organizational personnel that were previously disconnected. It provides the continuous access to the wireless network services and the flexible communication between the people. It provides the real-time business to employee communication, enhanced customers interactions, and fastest communication between the individuals. The communication occurs with the real-time wireless connection. It provides the data, audio and video access to any user, any time with a wireless enable device.*

*The wireless network may be WLAN, Wi-Fi, GSM, CDMA, WiMax or GPRS. There are many companies that provide the mobile computing solutions on contract and pay as you go mobile broadband plans to the home users and businesses. The cell phones and laptops are the most commonly used mobile computing devices. It can be referred to the two main fields portable and mobility.*

Now answer the following questions:

- i) How does Mobile Computing work?
- ii) What are the characteristics of Mobile Computing?
- iii) What is an example of Mobile Computing?

**b)** Write short note on the following: 6

- i) Mobile IP
- ii) 5G
- iii) Threats and security in Mobile Computing

**Q2.a)** What are the architectural components of Mobile Computing? Explain with diagrams. 5

**b)** What is Hand-off. List and explain the types of Hand-off. 4

**c)** List and explain the major functionalities of Mobile Computing. 3

3.a) What is meant by context-aware mobile computing? Write major challenges and possible solutions. 5

b) List two applications that are context aware system on your mobile phone and explain why they are context aware. 3

c) Give example of five applications that are not context aware and how we can make them context aware. 4

*Note: All application must be Mobile App such as Twitter, Instagram, Facebook, etc.*

4.a) Compare between CDMA and WCDMA. 3

b) What are the steps involved in the calling communication process between mobile users? Explain with diagrams. 5

c) Define cellular network. If a telephone system has bandwidth of 3 MHz and every channel needs 30 KHz then calculate the number of channels per BTS. 4

5.a) Draw clear diagram of the GSM system with necessary components and describe it in detail. 4

b) Explain the following terms: 6

- i) Base Station (BS)
- ii) Home Location Register (HLR)
- iii) Visitor Location Register (VLR)
- iv) Mobile Agents

6) What is the difference between infrastructure and ad-hoc networks? 2

6.a) List and describe channel allocation techniques. 5

b) Describe the modes of operation for the Mobile File System with necessary diagrams. 4

c) What are near and far terminal? Write problems cause by near and far terminals. 3

7.a) What are the functions of authentication and encryption in GSM? 4

b) Draw and describe the basic packet structure of an IEEE 802.11MAC. 4

c) Explain major components of satellite communication system. 4

8.a) What is UI? Differentiate between UX and UI. 4

b) How Android offers protocols and platforms for mobile computing? Explain. 4

c) What is the role of Reverse tunneling in route optimization? Explain. 4