**Professional Course Examination, May 2024**

( CBCS )

( 6th Semester )

**BACHELOR OF COMPUTER APPLICATIONS**

**( Mobile Computing )**

*Full Marks* : 75

*Time* : 3 hours

*The figures in the margin indicate full marks for the questions*

**( PART : A—OBJECTIVE )**

( *Marks* : 25 )

SECTION—I

( *Marks* : 15 )

**A.** Tick (✓) the correct answer in the brackets provided : 1×10=10

1. What is the key difference between mobile computing and wireless networking?

   *(a)* Mobile computing refers to the use of mobile devices, while wireless networking refers to the communication infrastructure ( )

   *(b)* Mobile computing is only concerned with software applications, while wireless networking deals with hardware components ( )

   *(c)* Mobile computing focuses on data processing, while wireless networking focuses on data transmission ( )

   *(d)* Mobile computing and wireless networking are synonymous terms ( )

2. SMS service is first used in

(a) 1G ( )

(b) 2G ( )

(c) 3G ( )

(d) 4G ( )

3. What is the primary purpose of Mobile IP?

(a) To optimize routing tables in fixed networks ( )

(b) To provide seamless connectivity for mobile devices as they move across networks ( )

(c) To encrypt data transmitted over wireless networks ( )

(d) To improve battery life of mobile devices ( )

4. Which of the following is a key mechanism in Mobile IP?

(a) Dynamic Host Configuration Protocol (DHCP) ( )

(b) Address Resolution Protocol (ARP) ( )

(c) Internet Control Message Protocol (ICMP) ( )

(d) Home Agent and Foreign Agent Communication ( )

5. In UMTS, what technology is used for the air interface?

(a) Time Division Multiple Access (TDMA) ( )

(b) Code Division Multiple Access (CDMA) ( )

(c) Frequency Division Multiple Access (FDMA) ( )

(d) Orthogonal Frequency Division Multiplexing (OFDM) ( )

6. UMTS is also known as

(a) IS-95 ( )

(b) GPRS ( )

(c) CDMA One ( )

(d) W-CDMA ( )

7. What defines the primary characteristic of a Mobile Ad-hoc Network (MANET)?

(a) Centralized control of network resources ( )

(b) Fixed infrastructure with predefined routing paths ( )

(c) Dynamic topology with self-configuring nodes ( )

(d) Exclusive reliance on wired connections ( )

8. What is the primary difference between MANETs and Vehicular Ad-hoc Networks (VANET)?

(a) VANETs have a fixed network infrastructure, while MANETs do not ( )

(b) VANETs primarily involve communication between vehicles while MANETs involve communication between any mobile devices ( )

(c) MANETs are more susceptible to security threats compared to VANETs ( )

(d) VANETs are designed for indoor communication, while MANETs are for outdoor environments ( )

9. Which of the following is a commercial mobile operating system?

(a) LINUX ( )

(b) Ubuntu ( )

(c) Android ( )

(d) macOS ( )

10. What is a characteristic of mCommerce (mobile commerce)?

(a) It only involves transactions between businesses ( )

(b) It excludes online shopping ( )

(c) It allows users to make purchase using mobile devices ( )

(d) It requires physical presence in a store ( )

**B.** State whether the following statements are *True (T)* or *False (F)* by putting a Tick (✓) mark : 1×5=5

1. WiFi router is a fixed and wireless-type.

( *T* / *F* )

2. Mobile IP enables users to keep different IP address while travelling to a different network.

( *T* / *F* )

3. The main advantages of UMTS over GSM is higher data transmission speeds.

( *T* / *F* )

4. MANET is a sub-class of VANET.

( *T* / *F* )

5. The first Android OS was released by Google in 20th September, 2008 by the name of 'Astro'.

( *T* / *F* )

## SECTION—II

( *Marks* : 10 )

**C.** Answer any *five* of the following questions : 2×5=10

1. *(a)* Write a short note on 4G cellular system.

**OR**

*(b)* What is MAC protocol?

2. *(a)* Explain mobile Internet protocol.

**OR**

*(b)* Differentiate between home agent and foreign agent.

3. *(a)* What is the difference between BTS and BSC in GPRS technology?

**OR**

*(b)* What are the benefits of GPRS technology?

4. *(a)* What is on-demand routing?

**OR**

*(b)* What are the applications of VANETs?

5. *(a)* What is the newest release of Android OS?

**OR**

*(b)* Write a note on SDK.

## ( PART : B—DESCRIPTIVE )

( *Marks* : 50 )

Answer the following questions : 10×5=50

**1.** *(a)* Explain the concept of mobile computing. Write the characteristics of mobile computing. 5

*(b)* Write the differences between mobile computing and wireless networking. 5

**OR**

*(c)* Write the comparison between TDMA and FDMA. 5

*(d)* Explain Random Assignment Protocols. 5

**2.** *(a)* Explain the meaning and components of Mobile IP. 5

*(b)* Describe the working function of route optimization in Mobile IP. 5

**OR**

*(c)* Explain any two protocols to improve the performance of TCP. 5

*(d)* Describe the overview of TCP/IP. 5

**3.** *(a)* Explain the architecture of GPRS with a suitable diagram. 10

**OR**

*(b)* Explain the following : 5×2=10

*(i)* Global System for Mobile (GSM) communication

*(ii)* Universal Mobile Telecommunication System (UMTS)

4. *(a)* Describe the basic concepts of mobile ad-hoc networks and mention its applications. 10

**OR**

*(b)* Describe the differences between MANETs and VANETs. 10

5. *(a)* Explain mobile device operating system with examples. 5

*(b)* Explain any two types of mobile operating system constraints. 5

**OR**

*(c)* Explain any three types of mobile payment systems. 5

*(d)* Describe security issues of mobile payment systems. 5

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**Student's Copy**

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