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)

(Marks: 15)

SECTION—I

A. Tick (/) the correct answer in the brackets provided:

 $1 \times 10 = 10$

- 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.	SM	S service	is	first	used	i in											
	(a)	1 G	.()													
	(b)	2G	()		,											
	(c)	3G	()									2				
	(d)	4G	()													
3.	Wh	at is the	pri	mary	pur	pose	of	Mobi	ile II	99							
	(a)	To optir	nize	rout	ting	table	s in	fixe	d ne	etwo	rks		()		
	(b)	To prov				conr (necti)	vity	for :	mob	ile d	levio	ces	as	the	уі	move
	(c)	To encr	ypt	data	tran	smit	ted	over	wire	eless	ne	twor	ks		()
	(d)	To impr	ove	batte	ery li	fe of	mo	bile	devi	ces		()				
4.	Wh	ich of the	e fol	lowir	ng is	a k	ey m	echa	anisı	m in	Mo	bile	IP	?			
	(a)	Dynamic	е Но	st C	onfig	urati	ion 1	Proto	col	(DH	CP)		()		
	(b)	Address	Res	oluti	on P	rotoc	col (A	ARP)		()						
	(c)	Internet	Cor	itrol	Mess	sage	Prot	ocol	(ICI	MP)		()				
	(d)	Home A	gent	and	Fore	eign	Ager	nt Co	omm	unio	catio	on		()		

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 ()

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	at is the primary difference between MANETs and Vehicular Ad-hoc tworks (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. W	hich of the following is a commercial mobile operating system?
(0	u) LINUX ()
(Æ	o) Ubuntu ()
(4	c) Android ()
(0	d) macOS ()
10. 1	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 ()

В.	State whether the following statements are True (T) or False (a Tick () mark:	F) 1	by	put		g 1×5=5
	1. WiFi router is a fixed and wireless-type.					
		(T	/	F)
	Mobile IP enables users to keep different IP address while a different network.	e tı	rav	ellir	ng	to
		(Т	/	F)
	 The main advantages of UMTS over GSM is higher data speeds. 	tra	ans	mis	ssic	on
		(Т	/	F)
		10				79
	4. MANET is a sub-class of VANET.					
		(T	/	F)
	 The first Android OS was released by Google in 20th Sep by the name of 'Astro'. 	pte	mb	er,	20	08
		(Т	/	F	`)

SECTION—II

(Marks: 10)

C. Answer any five of the following questions:

 $2 \times 5 = 10$

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.
- (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)

nsv	wer	the following questions:	×5=50
1.	(a)	Explain the concept of mobile computing. Write the characteristics mobile computing.	of 5
	(b)	Write the differences between mobile computing and wireles networking.	ss 5
3		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	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 $it_{\mathbb{S}}$ applications.	1.
		OR	10
	(b)	Describe the differences between MANETs and VANETs.	10
5	. (a)	Explain mobile device operating system with examples.	5
		Explain any two types of mobile operating system constraints.	5
		OR	
	(c)	Explain any three types of mobile payment systems.	5
		Describe security issues of mobile payment systems.	5

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(CBCS)

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(Mobile Computing)

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(PART : A-OBJECTIVE)

(Marks: 25)

SECTION-I

(Marks: 15)

A.	Tick (1	the	correct	answer	in	the	brackets	provided	
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 $1 \times 10 = 10$

- What is the key difference between mobile computing and wireless networking?
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	(a) 1G	()										
	(b)) 2G	(<u>,</u>)										
	(c)	3G	()										
	(d)	4G	()										
3.	W	hat is the	prir	mary p	ourpo	se of l	Mobile	IP?						
	(a)	To optin	nize	routin	g tab	les in	fixed	netwo	rks		(])	
	(b)	To provi	de s ietwo	eamle orks	ss co	nnectiv)	vity for	mob	ile (devi	ices	as	they	mov
	(c)	To encry	pt d	lata tr	ansm	itted o	ver wi	reless	ne	two	rks		()
	(d)	To impro	ove b	attery	life o	of mob	ile dev	rices		()			
4.	Wh	ich of the	follo	owing	is a l	cey me	chanis	sm in	Мо	bile	IP?			
	(a)	Dynamic	Hos	t Conf	igura	tion Pr	rotocol	(DHC	P)		(1)		
	(b)	Address l	Reso	lution	Proto	col (Al	RP)	()					
	(c)	Internet (Conti	rol Me	ssage	Protoc	col (IC	MP)		()			
	(d)	Home Age	nt a	nd Fo	reign	Agent	Comm	unica	tion		()		
						2							1.0	Contd.

In UMTS, what technology is used for the air interface?
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	(Ł) It excludes online shopping ()
	(c) It allows users to make purchase using mobile devices ()
	(6	d) It requires physical presence in a store ()

[Contd.

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B.	State whether the following statements are True (T) or False (F) by putting a Tick (I) mark:
	1. WiFi router is a fixed and wireless-type.
	(T / F)
	 Mobile IP enables users to keep different IP address while travelling to a different network.
	(T/F)
*1	 The main advantages of UMTS over GSM is higher data transmission speeds.
	(T / F)
	4. MANET is a sub-class of VANET.
	(T/F)
	 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

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OR

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- 2. (a) Explain mobile Internet protocol.

OR

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 OR
 - (b) Write a note on SDK.

(PART : B-DESCRIPTIVE)

(Marks: 50)

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(b) Write the differences between mobile computing and wireles networking.	s 5
OR	
(c) Write the comparison between TDMA and FDMA.	5
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2. (a) Explain the meaning and components of Mobile IP.	- 5
(b) Describe the working function of route optimization in Mobile IP.	5
OR	
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(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: (i) Global System for Mobile (GSM) communication (ii) Universal Mobile Telecommunication System (UMTS) 	5×2=10

• (a) Describe the basic concepts of mobile ad-hoc networks and applications.	mention	
		ita
Life street		110
- Table 1		10
(b) Describe the differences between MANETs and VANETs.	the fillow	
(a) Explain mobile device operating system with	m lav.	10
(a) Explain mobile device operating system with examples. (b) Explain any two types of mobile operating system constra	plidem	5
types of mobile operating system constra	ainta	3
(c) Explain	annes. W	5
any three types of mali		.
(d) Describe security issues of mobile payment systems.		5
payment systems,		5
Protocols ***	Tulqu i	
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