

BCA/MBC : 504 (O)

2025

(5th Semester)



BACHELOR OF COMPUTER APPLICATIONS

Paper : MBC : 504 (Old Course)

(**Mobile Computing**)

Full Marks : 70

Pass Marks : 45%

Time : 3 hours

(PART : B—DESCRIPTIVE)

(Marks : 45)

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

1. (a) What do you understand by mobility in mobile computing? What are the two different types of mobility in mobile computing? 1+4=5
- (b) What are the different types of applications in which mobile computing is used? 4

Or

- (c) What are the primary challenges facing the mobile Internet ecosystem? Propose two strategies for a mobile service provider to address these challenge. 2+4=6

- (d) What is bluetooth technology, and how is it used in mobile computing? 2
- (e) What is the full form of a SIM card? 1
2. (a) Explain the fundamental concept of Wireless Application Protocol (WAP). How did WAP attempt to overcome the limitations of early mobile devices and networks? 1+4=5
- (b) Explain constrained network bandwidth and protocol mismatch. 2+2=4
- Or
- (c) What are the main obstacles that occurred in mobile communications? 4
- (d) Compare and contrast the approach of the WAP and the current mobile Internet paradigm. 5
3. (a) Discuss three core principles of UI design for WML applications. 6
- (b) Explain—
- (i) 'walled garden' approach;
- (ii) future-proofing. $1\frac{1}{2}+1\frac{1}{2}=3$

Or

(c) What are the security challenges in mobile computing and how do we address these challenges? 4

(d) What is WMLScript? List out its key features. Explain. 1+4=5

4. (a) Explain the concept of Wireless Telephony Application (WTA) within the context of WAP. What unique functionalities did WTA enable? 5

(b) Elaborate on the strategic importance of tailoring content to the client in mobile computing. Discuss the key data points. 4

Or

(c) Analyse the transition from WAP services to the modern mobile app. What were the major limitations of the WAP that made it unsuitable for the evolution of the Internet? 6

(d) Draw a neat labelled WTA logical architecture. 3

5. (a) Discuss the relationship between Artificial Intelligence (AI) and future mobile networks. 6

(b) Explain the working of TCP in mobile computing. 3

(4)

Or

- (c) List and explain the key trends that will shape the mobile Internet future. 6
- (d) What will be the impact of mobile Internet on industries? 3

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(5th Semester)

BACHELOR OF COMPUTER APPLICATIONS

Paper : MBC : 504 (Old Course)

(Mobile Computing)

(PART : A—OBJECTIVE)

(Marks : 25)

The figures in the margin indicate full marks for the questions

SECTION—I

(Marks : 10)

Put a Tick (✓) mark against the correct answer in the brackets provided : 1×10=10

1. On which of the following factors does the shape of the cell depend on the cellular network?

- (a) Social condition ()
- (b) Environmental condition ()
- (c) Political condition ()
- (d) All of the above ()

2. Which of the following factors contributed to the rise of mobile data?

- (a) Decline in smartphone usage ()
- (b) Increase in wired Internet connections ()
- (c) Growth of 3G/4G/5G networks ()
- (d) Decrease in mobile apps ()

3. A major challenge in mobile Internet development is

- (a) limited use of mobile phones ()
- (b) high-speed connectivity everywhere ()
- (c) small screen size and limited bandwidth ()
- (d) unlimited storage capacity ()

4. Which language allows scripting in WAP applications?

- (a) Java ()
- (b) WMLScript ()
- (c) Python ()
- (d) C ()

5. Tailoring content to the client refers to

- (a) giving the same layout for all devices ()
- (b) removing customization ()
- (c) optimizing content for device capabilities ()
- (d) using desktop only websites ()

6. Which of the following layers of protocol architecture handles all the radio-related functions for signalling?

- (a) The layer 2 or LAPB (Link Access Protocol, Balanced) ()
- (b) The layer 1 or physical layer ()
- (c) Mobility management layer ()
- (d) Call management layer ()

7. For the purpose of making mobile communication effective, the technique of frequency modulation was invented by

- (a) Nikola Tesla ()
- (b) David Bohm ()
- (c) Albert Einstein ()
- (d) Edwin Armstrong ()

8. The sharing of a medium and its link by two or more devices is called

- (a) duplexing ()
- (b) microplexing ()
- (c) multiplexing ()
- (d) fully duplexing ()

9. Control channel group in GSM is

- (a) Common Control Channel (CCCH) ()
- (b) Dedicated Control Channel (DCCH) ()
- (c) Broadcast Control Channel (BCCH) ()
- (d) All of the above ()

10. _____ is a server problem of wireless networks using CDM.

- (a) Hidden and exposed terminals ()
- (b) Near and far terminals ()
- (c) First and last terminals ()
- (d) Open and close terminals ()

SECTION—II

(Marks : 5)

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

1. The rise of mobile data is closely linked to the development of 3G, 4G and 5G technologies.

(T / F)

2. Wireless Mark-up Language (WML) is based on XML.

(T / F)

3. Building and deploying end-to-end WAP services only requires hardware manufacturing.

(T / F)

4. Slow frequency hopping refers to more than one frequency hop during each symbol.

(T / F)

5. Radio signal capacity may be increased in cellular concept by increase in radio spectrum.

(T / F)

SECTION—III

(Marks : 10)

Answer the following questions in short :

2×5=10

1. What do you understand by mobile computing?

2. Explain about the smartphone revolution.

3. Explain the 'deck and card' metaphor in WML.

4. Identify two core functions provided by the Wireless Telephony Application Interface (WTAI).

5. What are Internet of senses and ubiquitous connectivity?
