Code No: **RT41053**   **R13**   Set No. 1

IV B.Tech I Semester Regular/Supplementary Examinations, Oct/Nov - 2018
MOBILE COMPUTING
(Common to Computer Science and Engineering and Information Technology)

Time: 3 hours   Max. Marks: 70

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
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PART–A *(22 Marks)*

1. a) Differentiate mobile computing, ubiquitous computing and pervasive computing. [3]
    b) Give the basic packet structure of an IEEE 802.11MAC [4]
    c) Name the requirements of Mobile IP and justify them. [4]
    d) Explain how API at mobile device sending queries and retrieving data from local database. [4]
    e) Show Communication asymmetry in uplink and downlink in a mobile network. [3]
    f) Describe the protocols supported by Linux OS for mobile computing. [4]

PART–B *(3x16 = 48 Marks)*

2. a) What are the subsystems in used in GSM network architecture? Explain the functionality of each unit with GSM architecture. [8]
    b) Explain how GPRS networks replace circuit switch services on second generation GSM communications. Explain its services and operations in detail. [8]

3.   "TDMA is much more flexible than FDMA"-Justify this statement with various TDMA algorithms. [16]

4. a) What are the general problems of Mobile IP regarding security and quality of service? Explain. [8]
    b) Write about steps involved in IP packet delivery and agent discovery in mobile networks. [8]

5. a) Explain how congestion control, slow start and fast retransmit mechanisms influence the efficiency of TCP in mobile environment. [8]
    b) Write in detail about Data Recovery Process and QoS Issues in mobile databases. [8]

6. a) Draw the diagram for mobile device Pulling the data records from a server or set of distributed systems and also explain its bandwidth and thresholds. [8]
    b) Write about data synchronization and different protocols offered for this purpose. [8]

7. a) How to pass messages using Dynamic Source Routing algorithm? Explain with example. [8]
    b) With neat sketch explain the architecture of WAP and its operational support. [8]

Code No: **RT41053**   **R13**   Set No. 2

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Time: 3 hours   Max. Marks: 70

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
*****

PART–A *(22 Marks)*

1. a) Write short notes on mobile and wireless devices.   [4]
    b) Discuss the design goals of Wireless LANs contributed for its commercial
        success.   [4]
    c) Explain the concept of reverse tunneling.   [3]
    d) Write about the implications on TCP mobility.   [3]
    e) Describe the role of software in data synchronization for mobile nodes.   [4]
    f) List and explain Symbian OS operational support for mobile nodes.   [4]

PART–B *(3x16 = 48 Marks)*

2. a) With neat sketch explain the layered structural arrangement of mobile computing
        and various service protocols used in it.   [8]
    b) Explain the integration process of tele, bearer and supplementary services
        through GSM.   [8]

3. a) Explain the process of allocating frequencies to transmission channels in mobile
        communications using FDMA.   [8]
    b) Write about various protocol specifications used in IEEE 802.11 physical layer.   [8]

4. a) Why is routing in multi-hop ad-hoc networks is complicated? Discuss various
        challenges in it.   [8]
    b) Explain two different ways of registration to forward the packets correctly.   [8]

5. a) Discuss the working principle, advantage and disadvantages of Indirect TCP in
        detail.   [8]
    b) Write about distributed Hoarding (caching) of specific database in mobile
        devices with diagram.   [8]

6. a) What is broadcasting? Explain its architecture with applications.   [8]
    b) Write a short note on pushing algorithm, push intervals, bandwidths and
        disadvantages of it.   [8]

7. a) Describe the working principle of AODV algorithm with suitable example.   [8]
    b) Explain various architectural layers of Bluetooth networks. What are the
        disadvantages of it?   [8]

Code No: **RT41053**   **R13**   **Set No. 3**

IV B.Tech I Semester Regular//Supplementary Examinations, Oct/November - 2018
MOBILE COMPUTING
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Time: 3 hours   **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
*****

PART–A *(22 Marks)*

1. a) Discuss some open research topics of mobile computing.   [3]
    b) Write advantages and disadvantages of Wireless LANs.   [4]
    c) Describe the steps in configuring IP addresses in DHCP.   [4]
    d) Write about selective retransmission policy in mobile TCP.   [4]
    e) Explain circular multi disk broadcast model.   [3]
    f) How Android offers protocols and platforms for mobile computing? Explain.   [4]

PART–B *(3x16 = 48 Marks)*

2. a) Discuss the constraints on mobile computing.
       (i) Energy Dissipation (ii) Memory   (iii) Hardware (iv) Communication   [8]
    b) What is the role of handover mechanism in satellite communications? Explain
       in detail.   [8]

3. a) Explain how SDMA is used to allocate separated space to users in wireless
       networks.   [8]
    b) With the help of timing diagrams explain coding, spreading of data from sender
       and reconstruction of same at receiver using CDMA technique.   [8]

4. a) Explain various entities and terms needed to understand mobile IP in detail.   [8]
    b) How to change the foreign agent with an optimized mobile IP? Explain
       additional messages required for it.   [8]

5. a) Can we use Snooping TCP as a transparent TCP? How? Discuss advantages
       and disadvantages.   [8]
    b) What are the additional features of mobile TCP to handle fast
       retransmit/recovery and transmission/time-out freezing? Explain.   [8]

6. Explain architecture, functions of classification of data delivery mechanisms?
    And also compare their operational requirements.   [16]

7. a) What are the challenges in mobile routing? Why traditional routing algorithms
       are not suitable? How to handle it using DSDV routing protocol? Explain.   [8]
    b) Write short notes on Java Card and TinyOS protocols used for mobile
       environment.   [8]

Code No: **RT41053**   **R13**   Set No. 4

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Time: 3 hours   Max. Marks: 70

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
*****

PART–A *(22 Marks)*

1. a) Write short notes on GSM localization.   [3]
    b) Discuss various operational differences between S/T/FDMA schemes.   [4]
    c) Describe the data transfer from mobile node to fixed node and vice-versa.   [4]
    d) Write about TCP connection setup overhead in transaction-oriented TCP.   [4]
    e) What is the working principle of adaptive information dispersal algorithm.   [4]
    f) Explain various functions supported by J2ME for mobile computing.   [3]

PART–B *(3x16 = 48 Marks)*

2. a) Give a simple reference model for mobile communications. Explain applications
        of mobile computing. How it handles enterprise problems?   [8]
    b) Explain how radio interface channels are allotted as uplink and down link in
        GSM.   [8]

3. a) Why does CSMA/CD fail in wireless networks? What are the problems raised?
        And how to handle them?   [8]
    b) Explain the basic transmission technologies and basic network settings used in
        Wireless LANs.   [8]

4. a) Explain how DHCP can be used to support mobility and mobile IP with its
        operational steps.   [8]
    b) Write about the general working principle of tunneling suitable for mobile IP
        using IP-in-IP and generic routing encapsulation.   [8]

5. a) Explain all the enhancements made to classical TCP to make it suitable for
        mobility.   [8]
    b) Describe the Two-tier Client–Server Architecture in mobile environment. How it
        can be expanded to n-tier architecture?   [8]

6. a) Explain about Number of adaptations and various algorithms for broadcast
        models.   [8]
    b) Discuss the importance of selective tuning. How to enable it? Explain directory
        based and hash-based methods.   [8]

7. a) What is service discovery? What is the role of mobile agents in it? Explain in
        detail.   [8]
    b) Write about XML based simple API. What are the advantages of it? Explain.   [8]

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