IT6601 Mobile Computing 2 mark question and answers

UNIT-I

1.What is mobile computing?

Mobile computing is a technology that allows transmission of data, via a computer, without having to be connected to a fixed physical link.

2. What is Mobility?

- **A person who moves**
  Between different geographical locations
  Between different networks
  Between different communication devices
  Between different applications
- **A device that moves**
  Between different geographical locations
  Between different networks

2. What are two different kinds of mobility?

User Mobility: It refers to a user who has access to the same or similar telecommunication services at different places.

Device Portability: many mechanisms in the network and inside the device have to make sure that communication is still possible while the device is moving.

3. Find out the characteristics while device can thus exhibit during communication.
- Fixed and Wired
- Mobile and Wired
- Fixed and Wireless
- Mobile and Wireless

4. What are applications of Mobile Computing?
- Vehicles
- Emergencies
- Business
- Replacement of wired networks
- Infotainment
- Location dependent services
- Mobile and wireless devices

5. What are the obstacles in mobile communications?
- Interference
- Regulations and spectrum
- Low Bandwidth
- High delays, large delay variation
- Lower security, simpler to attack
- Shared Medium
- Adhoc-networks

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6. Give the information's in SIM?
- Card type, serial no, list of subscribed services
- Personal Identity Number(PIN)
- Pin Unlocking Key(PUK)
- An Authentication Key(KI)

7. What are the Advantages of wireless LAN?
- Flexibility
- Planning
- Design
- Robustness

8. Mention some of the disadvantages of WLANS?
- Quality of service
- Proprietary solutions.
- Restrictions
- Safety and Security

9. Describe about MAC layer in DECT architecture.

The medium access control (MAC) layer establishes, maintains and releases channels for higher layers by activating and deactivating physical channels. MAC multiplexes several logical channels onto physical channels. Logical channels exist for signaling network control, user data transmission, paging or sending broadcast messages. Additional services offered include segmentation/reassembly of packets and error control/error correction.

10. What are the basic tasks of the MAC layer?

Medium access Fragmentation of user data Encryption

11. What are the basic services provided by the MAC layer?

Asynchronous data service (mandatory)
Time-bounded service (optional)

12. What are the techniques used for MAC management?

Synchronization
Power management
Roaming
Management information base(MIB)

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14. Define hidden terminal.

The transmission range of A reaches B but not C. The transmission range of C reaches B but not A. B reaches A and C. A cannot detect C and vice versa.
A starts sending to B, but C does not receive this transmission. C also wants to send something to B and senses the medium. The medium appears to be free, the carrier sense fails. C also starts

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sending, causing a collision at B. But A can't detect this collision at B and continues with its transmission. A is hidden for C and vice versa.

15. What is Mobile Computing and the applications ?

Mobile computing is the process of computation on a mobile device. In such computing, a set of distributed computing systems or service provider servers participate, connect , and synchronise through mobile communication protocols.

APPLICATIONS:

i) Mobile computing offers mobility with computer power.

ii) It provides decentralized computations on diversified devices, systems, and networks, which are mobile, synchronized , and interconnected via mobile communication standards and protocols.

iii) Mobile computing facilitates a large number of applications on a single device.

16.Limitations of Mobile Computing?

i)Resource constraints.
ii)Interface
iii)Bandwidth
iv)Dynamic changes in communication
environment. v)Network issues.
vi)Interoperability issues.
vii)Security Constraints.

17.Give the difference between the network 1G,2G,2.5G,3G mobile communication?
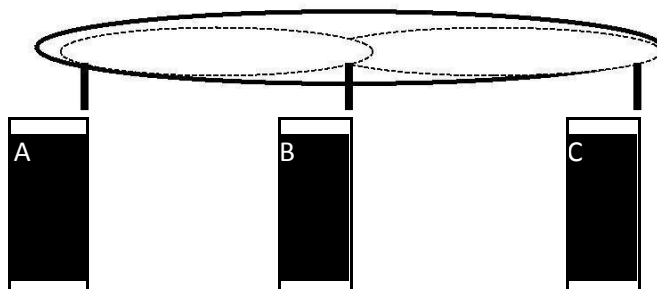
1G - Voice-only communication.
2G – Communicate voice as well as data signals.
2.5G – Enhancements of the second generation and sport data rates up to 100 kpbs.
3G – Mobile devices communicate at even higher data rates and support voice, data , and multimedia streams. High data rates in 3G devices enable transfer of video clips and faster multimedia communication.

18. Difference between Hidden and Exposed Terminal, Near and Far Terminals.

Hidden and Exposed Terminals

Let us consider three mobile phones A,B and C

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❖
  Transmission range of A reaches B but not C, C reaches B, but not A

  ❖
  B reaches both A and C

❖
  A starts sending to B but   C does not receive this transmission ,C also wants to send something to

  Band senses the medium

For C medium appears to be free and carrier sense fails, then C sends but it collides at B. Now A cannot detect collision at B and A also transmits, now A is hidden for C and vice versa. A is

hidden terminal and these hidden terminals may cause collision and unnecessary delay.

Let us consider another scenario where 'B' sends something to 'A' and 'C' wants to transmit data to some other mobile phones outside the interference ranges pf A and B. C senses the carrier and detects that the carrier is busy ; C postpones its transmission until it detects the medium is free ; but as A is outside the interference range of C, waiting is not necessary. I.e.

collision at B does not matter because the collision is too weak to propagate to A.

Near and Far Terminals
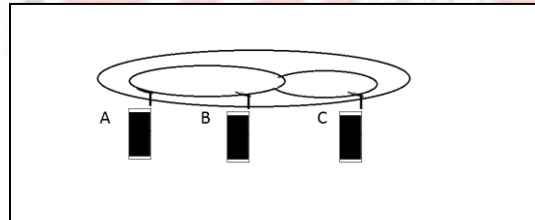
❖ Let us consider that A and B both sending with the same transmission power. When the signal strength decreases proportionally to the square of the   distance B's signal drowns out A's   signal .As a result 'C' cannot receive 'A's transmission.

❖
❖
  Now think of 'C' as being an arbiter for sending rights. In this case terminal B would already
❖

  drown out terminal A on the physical layer.

❖   'C' in return would have no chance of applying a fair scheme as it would only hear B.
❖

  The near/far effect is a severe problem of the wireless   network using the CDM.All signals should arrive at the receiver with more or less the same strength.

❖   Otherwise a person standin
❖

  g closer to somebody could always loud than a person farther away. Even   if the sender were separated by code , the closest one would simply drown out the others.

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19. What is MAC?

Message authentication codes (MAC) are also used to authenticate messages during transmission. MAC of a message is created using a cryptographic MAC function which is similar to the hash function but has different security requirements.

20.Define Mobile Binding?

A binding created for providing mobility to a mobile node after registration at a foreign network.

21.Agent-based Computing

An agent is any program that acts on behalf of a (human) user. A software mobile agent is a process capable of migrating from one computer node to another.

22.Ubiquitous computing

Ubiquitous computing enhances computer use by making many computers available throughout the physical environment, while making them effectively invisible to users.

23.Client-Server Computing

An architecture in which the client is the requesting machine and the server is the supplying machine. The client contains the user interface and may perform some or all of the application processing.

24. What do you mean by Digital Signature?

Digital signatures are used to enable verification of the records. A DSA (Digital Structure Algorithm) is used to sign a record before transmitting. It provides for a variable key length of maximum 512 0r 1024 bits. The DSS(Digital Signature Standard) is based on the DSA.Signatures enable identification of the sender identify the orgin of the message, and check message integrity.

25. Define the term wireless?

Wireless telecommunications refers to the transfer of information between two or more points that are not physically connected. Distances can be short, such as a few metres for television remote control, or as far as thousands or even millions of kilometers for deep-space radio communications. It encompasses various types of fixed, mobile, and portable applications, including two-way radios, cellular telephones, personal digital assistants (PDAs), and wireless networking.

26. What are the different types of mobile Middleware?

1.Adaptation
2.Agent

27.What are the logical channels in GSM?

- Traffic channel(TCH)
- Control channel(CCH)

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29. Define GPRS?

General Packet Radio Service (GPRS) is a packet oriented service for mobile devices data communication which utilizes the unused channels in TDMA mode in a GSM network and also sends and receives packet of data through the internet.

30. What is Communication?

Communication is a two-way transmission and reception and reception of data streams.
Transmissions are of two types,
Guided Transmission
Unguided Transmission

31. Explain difference between wired and wireless networks

Wired Vs. Wireless Networks

Wired Networks	Mobile Networks
- high bandwidth	- low bandwidth
- low bandwidth variability	- high bandwidth variability
- can listen on wire	- hidden terminal problem
- high power machines	- low power machines
- high resource machines	- low resource machines
- need physical access(security)	- need proximity
- low delay	- higher delay

32. Types of Wireless Devices

Laptops
Palmtops
PDAs
Cell phones
Pagers
Sensors

33. Why Mobile Computing?

Enable anywhere/anytime connectivity
Bring computer communications to areas without pre existing infrastructure
Enable mobility
Enable new applications
An exciting new research area

34.what are the New Forms of Computing available?.

Wireless Computing
Nomadic Computing
Mobile Computing
Ubiquitous Computing
Pervasive Computing
Invisible Computing

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35.Mobile Communication Networks: Examples

GSM (Global System for Mobile Communications): worldwide standard for digital, cellular Mobile Radio Networks

UMTS (Universal Mobile Telecommunications System): European Standard for future digital Mobile Radio Networks

AMPS (Advanced Mobile Phone System): analog Mobile Radio Networks in USA

DECT (Digital Enhanced Cordless Telecommunications): European standard for cordless phones TETRA (Terrestrial Trunked Radio): European standard for circuit switched radio networks

ERMES (European Radio Message System): European standard for radio paging systems (Pager)

802.11: International standard for Wireless Local Networks

Bluetooth: wireless networking in close/local

area Inmarsat: geostationary satellite systems

Teledesic: planned satellite system on a non-geostationary orbit

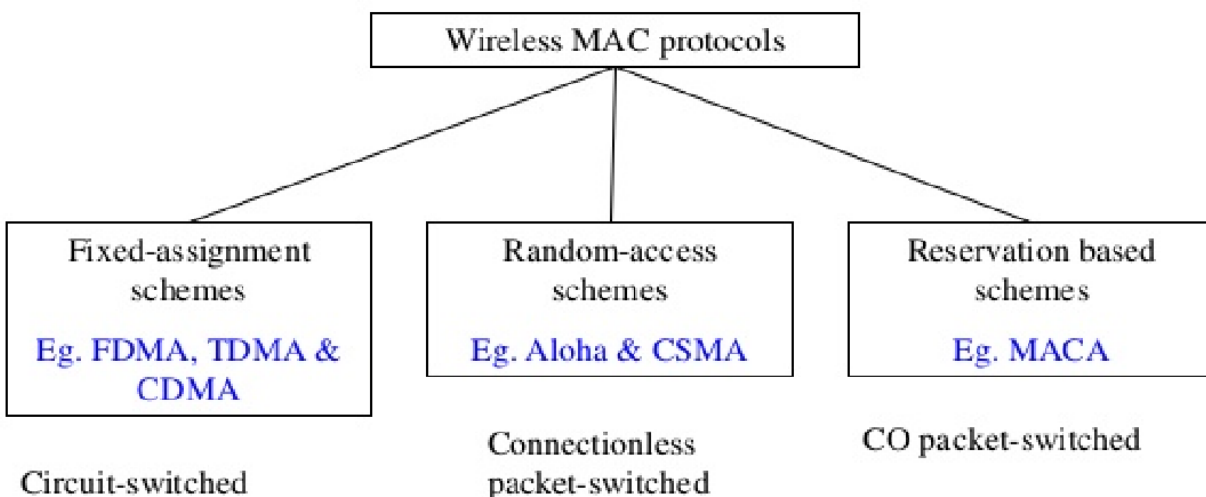**36.Components of a wireless communication system**

Transmitter, receiver, filter, antenna, amplifier, mixers

37.Wireless Networking Standards (Table1.1)

ITU, IEEE and ISO

IEEE 802.11 standards (a,bc,d,e,f…u)

38.Classification of wireless MAC protocols

39.What are the disadvantages of small cells?

a) Infrastructure b) Handover c) Frequency

40. What are the benefits of reservation schemes?

a) Increased no other station is allowed to transit during this slot   b) Avoidance of congestion.

c) Waiting time in clearly known.

3. Differentiate between free space loss and path loss. Free space loss Path loss

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42.Mobile Computing - Characteristics
–Mobile devices
     •Laptops
     •Palmtops
     •Smart cell phones
–Requirements
     •Data access:
–Anywhere
–Anytime
     •Nomadic users
–Constraints
     •Limited ressources
     •Variable connectivty:
–Performance
–Reliability

43. What are the different types of modulation ?

The Modulation types are:
i).Amplitude Modulation. ii).Frequency
Modulation. iii).Phase Modulation.

44. What are the multiplexing techniques ?
    The Multiplexing techniques are: i)Space division multiplexing. ii)Time division multiplexing. iii)Frequency division multiplexing. iv)Code division multiplexing.

45. Define Space Division Multiplexing Access?
    Space division multiple access (SDMA) means division of the available space so that multiple sources can access the medium at the same time. SDMA is the technique in which a wireless transmitter transmits the modulated signals and accesses a space slot and another transmitter accesses another space slot such that signals from both can propagate in two separate spaces in the medium without affecting each other.

46. Define Code division multiplexing Access?
    CDMA(Code Division Multiple Access) is an access method in which multiple users are allotted different codes (sequence of symbols) to access the same channel (set of frequencies)

47. Define Time division multiplexing Access?
    Time division multiplexing (TDMA) is an access method in which multiple users, data services, or sources are allotted different time-slices to access the same channel. The available time-slice is divided among multiple modulated-signal sources. These sources use the same medium, the same set of frequencies, and the same channel for transmission of data.

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48. Define Frequency division multiplexing Access?

Frequency division multiple access (FDMA) is an access method in which entails assignments of different frequency-slices to different users for accessing the same carrier.

49. Difference between Circuit Switching and Packet Switching?
CIRCUIT SWITCHING :

Circuit switching is a method of data transmission in which a circuit (Communication channel or path) once established, continues to be used till the transmission is complete.
PACKET SWITCHING :

Packet switching is a means of establishing connection and transmitting data in which the message consists of packets containing the data frames. A packet is a formatted series of data, which follows a distinct path directed by a router from among a number of paths, available at that instant.

50.What is CSMA

The capacity of ALOHA or slotted ALOHA is limited by the large vulnerability period of a packet.

•By listening before transmitting, stations try to reduce the vulnerability period to one propagation delay.

•This is the basis of CSMA (Kleinrock and Tobagi, UCLA, 1975).

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•By listening before transmitting, stations try to reduce the vulnerability period to one propagation delay.

•This is the basis of CSMA (Kleinrock and Tobagi, UCLA, 1975).

Station that wants to transmit first listens to check if another transmission is in progress (carrier sense).

•If medium is in use, station waits; else, it transmits.

•Collisions can still occur.

•Transmitter waits for ACK; if no ACKs, retransmits.

51.What is the aim of ubiquitous computing? (AUT-NOV/DEC 2012)

• The aim of ubiquitous computing is to design computing infrastructures in such a manner that they integrate seamlessly with the environment and become almost invisible.

• Present Everywhere Bringing mobile, wireless and sensor Ubiquitous computing (ubicomp) integrates computation into the environment, rather than having computers which are distinct objects

52.   What are the characteristics of mobile computing devices?
• Adaptation   Data dissemination and Management
• Heterogeneity   Interoperability Context awareness

53.   What are the key constraints of mobile computing?
• unpredictable variation in network quality
• lowered trust and robustness of mobile elements

54. **N-Tier Client-Server Framework and Tools**

        N-Tier -Any **N**umber of **Tiers** – No Limits

•   3-Tier

         Client (User Agent)

       Application Server

       Database

55. Define FDMA?

Frequency division multiple access (FDMA)

This comprises all algorithms allocating frequencies to transmission channels

   according to the frequency division multiplexing (FDM).
Frequency can be fixed or dynamic

56. Define CDMA?

     An access method in which multiple carriers, channels, or sources are allotted different codes (Sequences and Symbols) to access the same channel (set of frequencies at the same time in same space).

57. What is ALOHA?

     The ALOHAnet used a new method of medium access (ALOHA random access) and experimental UHF frequencies for its operation, since frequency assignments for communications to and from a computer were not available for commercial applications in the 1970s. But even before such frequencies were assigned there were two other media available for the application of an ALOHA channel – cables and satellites. In the 1970s ALOHA random access was employed in the widely used Ethernet cable based network and then in the Marisat (now Inmarsat) satellite network.

In the early 1980s frequencies for mobile networks became available, and in 1985 frequencies suitable for what became known as Wi-Fi were allocated in the US. These regulatory developments made it possible to use the ALOHA random access techniques in both Wi-Fi and in mobile telephone networks.

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UNIT-II

1. What are the requirements of mobile IP?
- Compatibility
- Transparency
- Scalability and efficiency
- Security

2. Mention the different entities in a mobile IP.
- Mobile Node
- Correspondent Node
- Home Network
- Foreign Network
- Foreign Agent
- Home Agent
- Care-Of address
- Foreign agent COA
- Co-located COA

3. Define Mobile node:

A mobile node is an end-system or router that can change its point of attachment to the Internet using mobile IP. The MN keeps its IP address and can continuously with any other system in the Internet as long as link layer connectivity is given.

4. Explain Cellular IP.

Cellular IP provides local handovers without renewed registration by installing a single cellular IP gateway for each domain, which acts to the outside world as a foreign agent.

5. What do you mean by mobility binding?

The Mobile Node sends its registration request to the Home Agent. The HA now sets up a mobility binding containing the mobile node's home IP address and the current COA.

6. Define COA.

The COA (care of address) defines the current location of the MN from an IP point of view. All IP packets sent to the MN are delivered to the COA, not directly to the IP address of the MN. Packet delivery toward the MN is done using the tunnel. DHCP is a good candidate for supporting the acquisition of Care Of Addresses.

7. Define a tunnel.

A tunnel establishes a virtual pipe for data packets between a tunnel entry and a tunnel endpoint. Packets entering a tunnel are forwarded inside the tunnel and leave the tunnel unchanged.

8. What is encapsulation?

Encapsulation is the mechanism of taking a packet consisting of packet header and data putting it into the data part of a new packet.

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9. What is decapsulation?

The reverse operation, taking a packet out of the data part of another packet, is called decapsulation.

10. What is MOT? Give its primary goal.

DAB faces a broad range of different receiver capabilities. So to solve this problem it defines a common standard for data transmission, the multi-media object transfer (MOT) protocol. The primary goal of MOT is the support of data formats used in other multi- media systems.

11. What is SUMR?

An important register in satellite networks is the satellite user mapping register (SUMR). This stores the current position of satellites and a mapping of each user to the current satellite through which communication with a user is possible.

12. Give the two basic reasons for a handover in GSM.

The mobile station moves out of the range of a BTS or a certain antenna of a BTS. The received signal level decreases continuously until it falls below the minimal requirements for communication. The error rate may grow due to interference. All these effects may diminish the quality of the radio link.
The wired infrastructure may decide that the traffic in one cell is too high and shift some MS to other cells with a lower load. Handover may be due to load balancing.

13. Give the security services offered by

GSM. Access control and authentication
Confidentiality
Anonymity

14. What is the primary goal of GSM?

The primary goal of GSM was to provide a mobile phone system that allows users to roam throughout Europe and provides voice services compatible to ISDN and other PSTN systems.

15. Differentiate GSM and DECT.

GSM DECT
1. Global systems for mobile communications
2. Digital enhanced cordless elecommunications
3. Range is up to 70km.
4. Range is limited to about 300m.

16. What are the two new network elements in GPRS architecture?

Gateway GPRS support node (GGSN): It is the inter-working unit between the GPRS network and external packet data networks (PDN). Serving GPRS support node (SGSN): It supports the MS.

17. Describe about MAC layer in DECT architecture.

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18. Give the full form for the following:
   a) CKSN b) EIR c) DTMF d) MOC
   a) CKSN- Ciphering key sequence number b) EIR- Equipment Identity Register
   c) DTMF- Dual Tone multiple frequency d) MOC- Mobile originated call

19. Define Snooping TCP?
      A protocol in which an agent buffers the packets from the fixed connection layer for transmission to the mobile node on a wireless transceiver; the agent also buffers the packets on the wireless transceiver from the node for transmitting to a layer at the fixed line. The agent snoops at the transmission and reception in place of acknowledgement-or-timeout-based TCP method in the mobile part of the network.

20. Define Mobile TCP?
      A method of splitting the TCP layer into two TCP sub-layers using a mechanism that reduces window size to zero. The split is asymmetric; The window is set to zero to prevent the transmission from the TCP transport layer at the mobile node (MN) or at the fixed node when disconnection is noticed. The window opens again on getting the packet, there is no slow start by the base transceiver and it is presumed that packet loss is due to disconnection and not due to congestion or interference.

21. Explain the concept "Fast Retransmit/ Fast Recovery Transmission"?
      A method in which there are four or more phases of fast retransmit and fast recovery –first phase as slow start and beginning (exponential), then fast retransmit/recovery phase 1 (FRR1) on three duplicate acknowledgements, fast retransmit/fast recovery phase 2 (FRR2), and wait (Constant time out and window size).

22. Define T-TCP?
      A protocol which is efficient and is used in situations where short messafes are to be sent in sequence and a packet is delivered after the SYN and SYN_ACK packet exchanges and the connection closes after the packet exchanges of FIN, FIN_ACK, and CLOSING.

23. Define ISR?
Interrupt Service Routine(ISR):
      A program unit (function, method, or subroutine) which runs when a hardware or software event occurs and running of which can be masked and can be prioritized by assigning a priority.

24.Define IST?
Interrupt Service Thread(IST):
      A special type of ISR or ISR unit (function, method , or subroutine) which initiates and runs on an event and which can be prioritized by assigning a priority.

25.Features of TCP?

      The main features of TCP are:
      1) Transmission as data Streams
      2) Buffering and retransmission
      3)Session-start, data transfer, and session-finish fully acknowledged end to end. 4)In-order delivery
      5)Congestion Control and avoidance

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26. What is explicit notification?

A method of congestion control by explicit notification of congestion, for example, when a base transceiver at the receiver end is not able to transmit a packet to the mobile node then it sends an ESBN (explicit bad state notification) to the sender (on fixed line) at the other end.

27. What is selective retransmission?

A method in which there is an additional acknowledgement, known as selective acknowledgement; a timeout is set at transmitting end for receiving SACKs. Only the lost packet corresponding ta a SACK needs to be retransmitted.

28. Methods of Congestion Control.

The methods of congestion control:

1)   Slow start and congestion avoidance
2)   Fast recovery after packet loss
3)   Fast retransmit and fast recovery
4)   Selective acknowledgement
5)   Explicit congestion notification

29. TCP header.

A header used in the TCP protocol; it consists of fields in five 32-bit words followed by words for the option fields and padding.

30. Describe the three subsystems of GSM.

Radio subsystem (RSS): It comprises all radio specific entities i.e. the mobile stations (MS) and the base station subsystem (BSS).

Networking and switching subsystem (NSS): The heart of the GSM system is formed by the NSS. This connects the wireless network with standard public networks.

Operating subsystem (OSS): It monitors and controls all other network entities.

31. What are the applications of satellites?

Weather forecasting
Radio and TV broadcast satellites
Military satellites
Satellites for navigation

32.Application Layer n protocols

File Transfer Protocol (FTP)
Trivial File Transfer Protocol (TFTP)
Network File System (NFS)
Simple Mail Transfer Protocol (SMTP)
Terminal emulation protocol (telnet)
Remote login application (rlogin)
Simple Network Management Protocol (SNMP)
Domain Name System (DNS)
Hypertext Transfer Protocol (HTTP)

33.What are Advantage and Disadvantage of MobileTCP?

Advantages: i. M-TCP maintains the TCP end-to-end semantice. The SH does not send any ACK itself but forwards the ACKs from the MH. ii.If the MH is disconnected, M_TCP avoids useless retransmissions, slow starts or breaking connections by simply shrinking the sender's window to 0; iii. Since M-TCP does not buffer data in the SH as I-TCP does, it is not necessary to forward buffers to a new SH. Lost packets will be automatically retransmitted to the new SH.

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Disvantages: i. As the SH does not act as proxy as in I-TCP, packet loss on the wireless link due to bit errors is propagated to the sender. M-TCP assumes low bit error rates, which is not always a valid assumption. ii. A modified TCP on the wireless link not only requires modification to the MH protocol software but also new network elements like the bandwidth manager

34. What is mobile routing?

Even if the location of a terminal is known to the system, it still has to route the traffic through the network to the access point currently responsible for the wireless terminal. Each time a user moves to a new access point, the system must reroute traffic. This is known as mobile routing.

35. What are the functions which support service and connection control?

Access point control function

>Call control and connection control

function >Network security agent

>Service control function >Mobility management function

36. What are the examples for service scenarios identified in WATM ?

>Office environments

>Universities, schools, training,

centres >Industry >Hospitals

>Home

>Networked vehicles

37. What is slow start?

TCP's reaction to a missing acknowledgement is necessary to get rid of congestion quickly. The behavior TCP shows after the detection of congestion is called slow start.

38. What is the use of congestion threshold?

The exponential growth of the congestion window in the slow start mechanism is dangerous as it doubles the congestion window at each step. So a congestion threshold is set at which the exponential growth stops.

39. What led to the development of Indirect TCP?

TCP performs poorly together with wireless links

TCP within the fixed network cannot be changed. ,This led to the development of I-TCP which segments a TCP connection into a fixed part and a wireless part.

40. What is the goal of M-TCP?

The goal of M-TCP is to prevent the sender window from shrinking if bit errors or disconnection but not congestion cause current problems.

It wants

• To provide overall throughput

• To lower the delay

• To maintain end-to-end semantics of TCP

• To provide a more efficient handover.

41. What do you mean by persistent mode?

Persistent mode is the state of the sender will not change no matter how long thereceiver is disconnected. This means that the sender will not try to retransmit the data.

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42. What are the characteristics of 2.5G/3.5G wireless networks?

Data rates
Latency
Jitter
Packet loss

43. What are the configuration parameters to adapt TCP to wireless environments?

Large Windows
Limited Transmit
Large MTU
Selective Acknowledgement
Explicit Congestion
Notification Timestamp
No header compression

44.Requirements to Mobile IP

Transparency
mobile end-systems keep their IP address
continuation of communication after interruption of link
possible point of connection to the fixed network can be
changed Compatibility
support of the same layer 2 protocols as IP
no changes to current end-systems and routers required
mobile end-systems can communicate with fixed
systems Security
authentication of all registration
messages Efficiency and scalability

only little additional messages to the mobile system required (connection typically via a
low bandwidth radio link)
world-wide support of a large number of mobile systems in the whole Internet

45.Mobile IP Terminology
Mobile Node (MN)

system (node) that can change the point of connection to the network without changing its IP address

Home Agent (HA)
system in the home network of the MN, typically a router
registers the location of the MN, tunnels IP datagrams to the COA
Foreign Agent (FA)
system in the current foreign network of the MN, typically a router
forwards the tunneled datagrams to the MN, typically also the default router for the
MN Care-of Address (COA)
address of the current tunnel end-point for the MN (at FA or MN)
actual location of the MN from an IP point of view
can be chosen, e.g., via DHCP

Correspondent Node (CN)
communication partner

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45.What Mobile IP

Mobile IP solves the following problems:

if a node moves without changing its IP address it will be unable to receive its packets,

if a node changes its IP address it will have to terminate and restart its ongoing connections everytime it moves to a new network area (new network prefix).

Mobile IP is a routing protocol with a very specific purpose.

Mobile IP is a network layer solution to node mobility in the Internet.

Mobile IP is not a complete solution to mobility, changes to the transport protocols need to be made for a better solution (i.e., the transport layers are unaware of the mobile node's point of attachment and it might be useful if, e.g., TCP knew that a wireless link was being used!).

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UNIT III
MOBILE TELECOMMUNICATION SYSTEM

1. Define GSM?
  The global system for mobile communication (GSM) was developed by Groupe Speciale Mobile(GSM) which was founded in Europe in 1992. The Gsm is a standard for mobile telecommunication through a cellular network at data rates if upto 14.4 kbps. Now a days it consist of a set of standards and protocols for mobile telecommunication.

2. Define GPRS?
  General Packet Radio Service (GPRS) is a packet oriented service for mobile devices data communication which utilizes the unused channels in TDMA mode in a GSM network and also sends and receives packet of data through the internet.

3. What are subsystems in GSM system?
   Radio subsystem (RSS)
   Network & Switching subsystem (NSS)
   Operation subsystem (OSS)

4. What are the control channel groups in GSM?
   The control channel groups in GSM are:
  Broadcast control channel (BCCH)
  Common control channel (CCCH)
  Dedicated control channel (DCCH)

5. What are the four types of handover available in GSM?
  Intra cell Handover
  Inter cell Intra BSC Handover
  Inter BSC Intra MSC
  handover Inter MSC Handover

6. What is the frequency range of uplink and downlink in GSM network?
The frequency range of uplink in GSM network is 890-960 MHz
The frequency range of downlink in GSM network is 935-960 MHz

7. What are the security services offered by GSM?
   The security services offered by GSM are:
   Access control and authentication.
   Confidentiality.
   Anonymity.

8. What are the reasons for delays in GSM for packet data traffic?
 Collisions only are possible in GSM with a connection establishment. A slotted ALOHA mechanism is used to get access to the control channel by which the base station is told about the connection establishment attempt. After connection establishment, a designated channel is installed for the transmission.

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9. What is meant by beacon?
A beacon contains a timestamp and other management information used for power management and roaming. e.g., identification of the base station subsystem (BSS)

10 . List out the numbers needed to locate an MS and to address the MS.
The numbers needed to locate an MS and to address the MS
are: Mobile station international ISDN number (MSISDN)
International mobile subscriber identity (IMSI)
Temporary mobile subscriber identity (TMSI)
Mobile station roaming number (MSRN)

11 . What is meant by GPRS?
  The General Packet Radio Service provides packet mode transfer for applications that exhibit traffic patterns such as frequent transmission of small volumes.

12. What is meant by GGSN?
  GGSN is Gateway GPRS Support Node. It is the inter-working unit between the GPRS network and external packet data networks. The GGSN is connected to external networks via the Gi interface and transfers packets to the SGSN via an IPbased GPRS backbone network.

13. What is meant by SGSN?
  SGSN is Serving GPRS Support Node. It supports the MS via the Gb interface. The GSN is connected to a BSC via frame relay.

14. What is meant by BSSGP?
  BSSGP is Base Station Subsystem GPRS Protocol. It is used to convey routing and QoS- related information between the BSS and SGSN.BSSGP does not perform error correction and works on top of a frame relay network.

15.Expand GSM, GPRS and UMTS.
   • Global System for Mobile Communication (GSM)
   • General Packet Radio Service (GPRS)
   • Universal Mobiie Telecommunication System (UMTS)

16. Mention the types of Interface in GSM system and its use.

  • **A interface**

   o   Makes the connection between the RSS and the NSS
   o   Based on circuit-switched PCM-30 systems (2.048 Mbit/s), carrying up to
        30 64 kbit/s connections

  • **0 interface**

   o   Makes the connection between the RSS and the OSS
   o   Uses the Signalling System No.7 (SS7) based on X.25 carrying management
        data to/from the RSS
   • **U interface**

   o Makes the connection between the BTS and MS
   o Contains all the mechanisms necessary for wireless transmission

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- **Ab. interface**
IS
Makes the connection between the BTS.and BSC
Consists of 16 or 64 kbitls connections

17.What is RSS?
- RSS stands for Radio subsystem (RSS)
- RSS comprises all radio specific entities

18.Name the entities ofRSS.

- Base Station Subsystem (BSS)
- Base Transceiver Station (BTS)
- Base Station Controller (BSC)
- Mobile Station (MS)

19.Mention the advantages of GSM.
o Communication
o Total mobility
o Worldwide connectivity
o High capacity
o High transmission quality'
o Security functions

20.What does SIM card contain?
- a personal identity number (PIN)
- a PIN unblocking key (PUK)
- an authentication key Ki
- the international mobile subscriber identity (IMSI)

21. Mention the disadvantages of GSM.
- No end-to-end encryption of user data
- Reduced concentration while moving
- Electromagnetic radiation
- High complexity of system
- Several incompatibilities within the GSM standards
- Card-type
- Serial number
- A list of subscribed services

22.Mention the use of SS7.
- Used for handling all signaling needed for
- connection setup,
- connection release and
- connection release and
- handover of connections to other MSCs

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UNIT IV

IVMOBILE AD-HOC NETWORKS

1.Define MANET.
  • MANET - Mobile Adhoc NETworks
 . Continuously self-configuring, infrastructure-less network of mobile devices connected
    without wires

2. List the advantages of MANET.
Independence from central network administration

   • Self-configuring, nodes are also routers

• Self-healing through continuous re-configuration

• Scalable-accommodates the addition of more nodes

• Flexible-similar to being able to access 'the Internet from many different locations

• Ease of deployment

• Speed of deployment

  • Decreased dependence on infrastructure

 . Reduced administrative cost

  • Supports anytime and anywhere computing

3. What are the limitations of MANET?
•Each node must have full performance

•Throughput is affected by system loading

•Reliability requires a sufficient number of available nodes

•Large networks can have excessive latency (time delay), which affects some applications

•Limited wireless range •Hidden terminals

•Packet losses due to transmission errors •Routes changes

•Devices heterogeneity •Battery power

constraints

•Link changes are happening quite often •Routing loop

may exist

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4. Difference between cellular and Ad-Hoc Networks

CELLULAR	Ad-Hoc NETWORKS
Infrastructure Networks	Infrastructureless Networks
Fixed, pre-located cell sites and base stations	No base station, and rapid deployment
Static backbone network topology	Highly dynamic network topologies
Relatively caring environment and stable connectivity	Hostile environment and irregular connectivity
Detailed planning before base station can be installed	Ad-Hoc network automatically forms and adapts to changes
High setup costs	Cost-effective
Large setup time	Less setup time

5. What are the functions of each node in MANET?
- Forward the packet to the next hop
  Before forwarding, Sender has to ensure that:
- . the packet moves towards its destination
- b. the number of hops(path length) to destination is minimum
- c. Delay is minimized
- d. Packet loss is mimimum through the path
- . Path does not have a loop

6. Comparison of Link state and Distance vector.

Routing protocol	Building Topological map	Router can Independently determine the shortest path to every network	Conver-gence	Event driven routing up-dates (instead of periodic updates)	Use of LSP
Link State	Yes	Yes	Fast	Generally Yes	Yes
Distance Vector	No	No	Slow	Generally No	No

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7. List the Types of Communications.

• Unicast

  o Message is sent to a single destination node

• Multicast

  o Message is sent to a selected subset of network nodes

• Broadcast

  o Broadcasting is a special case of multicasting

  o Message is sent to all the nodes in the network

8. Define Proactive (table-driven) protocols.

• Also known as table-driven routing protocols
• Each node in the routing table maintains information about routes to every other node in the network
  o Tables are updates frequently due to
  • Changes in network topology
  • Node Movements
• N odes shutting down
  o Nodes can determine the best route to a destination
• Generates a large number of control messages to keep. the routing tables up-to-date
  o Generates overhead which consumes large part of available bandwidth

9. Define Reactive protocols.

  • Also called as On-demand routing protocol
  • Nodes do not maintain up-to-date routing information o
  New routes are discovered only when required
  • Uses flooding technique to determine the route
  O Flooding technique is used when the node does not have routing knowledge

10. Compare MANET Vs VANET

MANET	VANET
MANET - Mobile Adhoc NETwork	VANET- Vehicular Adhoc NETworks
Nodes moves r£t?domly	Nodes moves regularly
Mobility is low	Mobility is high
Reliability is medium	Reliability is high
Node lifetime depends on power source	N ode lifetime depends on vehicle life time
Network topology is sluggish and slow	Network topology is frequent and fast

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UNIT V
VMOBILE PLATFORMS AND APPLICATIONS

1.Define Operating System.
- Interface between hardware and user
- Manages hardware and software resources of the system
- Provides set of services to application programs

2.Name the features of Operating System.
- Multitasking
- Scheduling
- Memory Allocation
- File System Interface
- Keypad Interface
- I/O Interface
- Protection and Security
- Multimedia features

3. How is the operating system structured?
- Kernel Layer
- Shell Layer

4. Give the types of Operating System.
- Monolithic Kernel
- Micro kernel

5. Specify the motivation of Monolithic Kernel OS design.
- Kernel contains the entire OS operations except shell code
- Motivation
  o OS services can run more securely and efficiently in supervisor mode

6. Mention the examples of Monolithic Kernel OS design.
  o Windows
  o Unix

7. List the Advantages of Monolithic Kernel OS design.

  o Provides good performance

  o Always runs in supervisor mode

  o More efficient and secure

8. List the disadvantages of Monolithic Kernel OS design. o Makes kernel
- Massive
- Non-modular
- Hard to tailor
- Maintain
- Extend
- Configure

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9. List the disadvantages of Microkernel OS design.
- Flexible
- Modular
  Easier to port
  Easy to extend and implement

10. List the disadvantages of Microkernel OS design,
- Difficult to debug compared to application programs
- Bog in the kernel crashes the system and the debugger
- Non- reliable

11. What is Mobile OS?
- Facilitate third party development of application software
- Allow manufacturers of different brands of mobile devices to build their choice set of functionalities for the users

12. Give some examples of Mobile OS.
- Windows Mobile
- Palm OS
- Symbian OS
- iOS
- Android
- Blackberry

13. What are the five parts in Android architecture or Android software stack?
- Application Layer
- Application Framework
- Android Runtime
- Native libraries (Middleware)
- Linux kernel

14. What are the Key services provided in Application Framework?
- Activity Manager
- Content Providers
- Resource Manager
- Notifications Manager
- View System

15. List the Native libraries in Android architecture.
WebKit - web browser engine
OpenGL
   FreeType - font support
- . SQLite - SQL database
Media - playing and recording audio and video formats
MP3
MPEG-4 , • C runtime library (libc) etc

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16. Mention the responsibilities of Linux Kernel.

- Device drivers
- Power management
- Networking Functionalities .
- Memory management
- Device management
- Resource access

17. What is M-Commerce?
- M-Commerce stands for Mobile Commerce
- Buying and selling of goods and services through mobile handheld devices

18. Compare B2C and B2B.

B2C	B2B
B2C stands for Business- to-Consumer	B2B stands for Business- to- Business
Form of commerce in which products or services are sold by a business firm to a consumer	Form of commerce in which products or services are sold from a company to its dealers

17. What is the function of transport layer in WAP?
The transport layer offers a bearer independent, consistent datagram-oriented service to the higher layers of the WAP architecture. Communication is done transparently over one of the available bearer services.

18. What is the use of WCMP?
The wireless control message protocol provides error handling mechanisms for WDP. WCMP is used for diagnostic and informational purposes. It is used by WDP nodes and gateways to report errors.

19. What are the advantages of WTP?
WTP offers several advantages to higher layers, including an improved reliability over datagram services, improved efficiency over connection-oriented services and support for transaction-oriented services such as web browsing.

20. How is reliability achieved in WTP?
WTP achieves reliability using duplicate removal, retransmission, acknowledgements and unique transaction identifiers.

21. What are the service primitives offered by WTP?
The three service primitives offered by WTP
are o TR-Invoke to initiate a new transaction
o TR-Result to send back the result of a previously initiated transaction
o TR-Abort to abort an existing transaction.

22. What are the features offered by WSP?
WSP offers certain features for content exchange between cooperating clients and servers: Session management
Capability negotiation
Content encoding.

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23. What are the features offered by WSP/B?

In addition to the general features of WSP, WSP/B offers the following features adapted to web browsing:

HTTP/1.1 functionality

Exchange of session headers

Push and pull data transfer

Asynchronous requests

24. What is meant by WML?

The wireless markup language(WML) is based on the standard HTML known from the www and on HDML. WML is specified as an XML document type. WML follows a deck and card metaphor.

25. What are the capabilities of WMLScript?

WMLScript offer several capabilities:

Validity check of user input

Access to device facilities Local

user interaction Extension to the

device software

26. Define WTA

Wireless telephony application (WTA) is a collection of telephony specific extensions for call and feature control mechanisms, merging data networks and voice networks.

27. What do you mean by MMS?

The multimedia messaging service (MMS) transfers asynchronous multi-media content. MMS supports different media types such as JPEG, GIF, text and AMR coded audio. There is no fixed upper bound for the message size. Depending on the network operator and device capabilities typical sizes are 30-100 Kbytes.

29 What are the two functions of transport layer in the internet ?

1) Checksumming over user data.

2) Multiplexing/Demultiplexing from /to applications.

30. Distinguish TCP& UDP ?

TCP   UDP

1) Connection oriented protocol Connection less protocol

2) TCP is network friendly   UDP is not network friendly

3) TCP guarantees in-order delivery or

reliable data transmission using

Retransmission techniques.   Does not pull back in case of congestion to

send packets in to an already congested network.

16 MARKS – KEYPOINTS

1.Explain in detail about Signal Propagation.

Path loss of radio signals

Ground wave

Sky wave

Line-of-sight

Additional Signal propagation effects

Blocking (or) Shadowing, Reflection, Refraction, Scattering, Diffraction

Multi-path propagation

Delay Spread

Intersymbol Interference

Short-term fading, long-term fading

Doppler Shift

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2. Write a brief note about multiplexing.

Space division
multiplexing Guard space
disadvantages
Frequency division multiplexing
Adjacent Channel Interference
disadvantages
Time division
multiplexing Guard spaces
Co-channel Interference
Advantages, disadvantages
Code division multiplexing
Guard spaces- orthogonal codes
Advantages, disadvantages

3. What is modulation? Explain in detail.
Introduction
Digital   modulation,   Analog
modulation Antennas
Frequency division Multiplexing
Medium Characteristics
Spectral efficiency, Power efficiency, Robustness
Amplitude Shift Keying
Advantages, disadvantages, Applications
Frequency Shift Keying
Binary FSK
Continuous Phase Modulation
Phase Shift Keying
Binary PSK
Phase lock loop
Advanced Frequency Shift Keying
Minimum Shift Keying, Gaussian MSK
Advanced Phase Shift Keying
Quadrature PSK
Reference signal
Differential QPSK
Quadrature Amplitude
Modulation Multi-carrier
modulation Advantages

4. Briefly demonstrate the concept of spread spectrum.
Direct Sequence Spread Spectrum
Chipping Sequence
Pseudo-noise Sequence
Spreading factor
DSSS transmitter & receiver
Frequency hopping Spread Spectrum
Hopping Sequence
Dwell Time
Slow & Fast Hopping FHSS
transmitter & receiver

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5. Describe in detail about cellular systems.

Base Station, cell
Advantages
Higher capacity, less transmission power, local interference only,
Robustness Disadvantages
Infrastructure needed, Handover needed, Frequency planning Clusters,
sectorized antennas, Borrowing Channel Allocation(BCA), Fixed
Channel Allocation(FCA), Dynamic Channel Allocation(DCA)

6. Describe the mobile services provided by GSM in detail.

Bearer Services
Transparent & Non- transparent Bearer Services
Tele Services
Telephony
Emergency number
Short Message Service
Enhanced Message Service
Multimedia Message Service
Group 3 fax
Supplementary Services
Typical services

7. Explain in detail about the GSM architecture.

Radio Subsystem
Base Station Subsystem
Base Transceiver Station
Base Station Controller
Mobile Station
Subscriber Identity Module
Personal   Identity   Number,   PIN
Unblocking Key
Network and Switching Subsystem
Mobile Services Switching center
Home Location register
Visitor Location register
Operation Subsystem
Operation and Maintenance center
Authentication center
Equipment Identity Register

8. Briefly explain about GPRS

GPRS concepts
Time slots
PTP packet transfer service
QoS profile
Delay
GPRS architecture
GSN
Mobility management

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9. Give a detailed explanation about DECT

System architecture
Global network
Local network
Home database, visitor database
Protocol architecture
Physical layer
Medium access control layer
Data link control layer
Network layer

10. Explain briefly about Satellite systems

History
SPUTNIK
SYNCOM
INTELSAT1
Applications
Weather forecasting, Radio & TV broadcast satellites, military satellites, satellites for navigation. Global telephone backbone, connections for remote or developing areas, global mobile communication
Basics
Routing
Fg=Fc
Inclination angle, elevation angle
Footprint
GEO(Geostationary Earth Orbit) Advantages, disadvantages LEO(Low Earth Orbit)
Advantages, disadvantages
MEO(Medium Earth Orbit)
Advantages, disadvantages
HEO(Highly Elliptical Orbit) Advantages, disadvantages Localization
Home Location register(HLR) Visitor
Location register (VLR) Satellite user
mapping register(SUMR) Handover.

Intra-satellite, inter-satellite, Gateway, Intersystem handover

11. Explain the types of broadcasting in detail.

Digital Audio Broadcasting (DAB)
Transport mechanisms
Main Service Channel
Fast Information Channel
Multi-media object Transfer protocol
Header core, Header extension, Body Object repetition, Interleaved objects, segment repetition, Header repetition
Digital Video Broadcasting
(DVB) Contents of DVB
Network Information Table, Service Description table, Event Information table, Time and date table DVB Data Broadcasting
Data pipe, Data Streaming,, multiprotocol encapsulation, data carousels, object carousels. DVB for high-speed Internet access

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12. Give a detailed description about the physical layer of IEEE 802.11

Frequency hopping Spread Spectrum Functions

Synchronization, Start frame delimiter, PLCP_PDU length word, PLCP signaling field, Header error check

Direct Sequence Spread Spectrum

Synchronization, Start frame delimiter, signal, Service, Length, Header error check

Infra red

13. Make a detailed description about MAC management.

Synchronization
Timing Synchronization function
Beacon
Beacon transmission in
Infrastructure network
Ad-hoc network
Power management
Sleep & awake states
Power management in
Infrastructure network
Traffic indication map
Delivery Traffic indication map
PS(power saving) poll
Ad-hoc network
Ad-hoc Traffic indication map
Roaming
Steps
Scanning
Passive & active scanning
Association request
Association response
Updation of database

14. Explain briefly about HIPERLAN1

Phases
Prioritization
Elimination
Yield
Transmission
Quality of Service support and other specialities
MSDU Lifetime
Power Conservation
Encryption, decryption

15. Give a short description of the Bluetooth architecture

Networking
Piconet
Scatternet
Protocol stack
Core specifications, profile specifications
Core protocols
Link manager protocol, Logical link control &
adaptation protocol, service discovery protocol
Cable replacement protocol, telephony control protocol specification
Host controller interface

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16. What are the advantages and disadvantages of WLANs? Explain.

Advantages
Flexibility
Planning Design
Robustness Cost
Disadvantages
Quality of
service

Proprietary solutions
Restrictions
Safety and security

17. Briefly explain about the goals, assumptions and requirements of mobile IP.

Quick 'solutions'
Requirements
Compatibility
Transparency
Scalability   and
efficiency Security

18. Give a detailed note about tunneling and optimization in mobile IP.

Tunneling & Encapsulation
IP-in-IP encapsulation
Minimal encapsulation
Generic routing encapsulation
Optimization
Triangular routing, binding cache
Four additional messages Binding request Binding update
Binding acknowledgement
Binding warning
Reverse tunneling
Firewalls
Multi-cast
TTL

19. Explain the concept of routing in MANET

Fundamental differences between wired & wireless ad-hoc
networks Asymmetric links
Redundant links
Interference
Dynamic topology
Problems with ad-hoc routing
Need for algorithms with high dynamic
topology Information from lower layers
essential Centralized approaches will not work
Efficient routing capabilities are needed
Notion of connection with certain characteristics will not
work Flooding

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20. Write short notes on DSR and DSDV

Dynamic Source Routing
(DSR) 2 phases in routing
Route discovery
Route Maintenance
Basic operation
Optimization of the basic algorithm
Approaches for Route Maintenance
Destination Sequence Distance Vector
(DSDV) Sequence numbers
Damping
Routing table

21. Give a detailed explanation about Agent Discovery and registration of mobile IP.

Agent advertisement.
Agent advertisement
message Agent
advertisement packet Type
#addresses Lifetime
Preference Length, bits
Agent solicitation
Three solicitations: one per second
Decrease solicitations exponentially
Registration

22. Give a detailed view of traditional TCP.

Congestion Control
Dropped packet
Retransmission   of   missing
packet Slow Start
Congestion window
Congestion threshold
Exponential growth
Fast retransmit/ Fast
recovery Implications on
mobility Error rates
Packet loss

23. Explain indirect TCP in detail.

Socket and state migration after handover of a mobile
host Advantages
No change in TCP protocol
Transmission errors on wireless links cannot propagate into the fixed network
Different solutions can be tested without jeopardizing the stability of the
internet Uses precise time-outs to guarantee retransmissions as fast as possible
Partitioning allows the use of different transport layer
protocol
Disadvantages
Loss of end-to-end semantics of TCP might cause
problems Increased handover latency may be problematic
FA must be a trusted entity.

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24. Give a detailed description about Mobile TCP.
2 parts Unmodified
TCP Optimized
TCP Persistent
mode Bandwidth
manager
Advantages
Disadvantages

25. Describe in detail about WAP architecture
Bearer services
Transport layer Service Access point (T-SAP)
Security layer
Security SAP (SEC-SAP)
Transaction layer
Transaction SAP (TR-SAP)
Session layer
Session-SAP (S-SAP)
Application layer
Integration of www and mobile telephony applications
Integration of WAP components

IT6601 – MOBILE COMPUTING

Question bank – Detailed Questions UNIT –I
1. Discuss the advantage and disadvantage of cellular system with small cells   (06)
2. Briefly explain the Frequency Division Multiplexing   (06)
3. Write short notes on DHSS   (04)
4. Write short note on FHSS   (04)
5. Explain the GSM system architecture with a neat diagram.   (16)
6. Describe the security services provided by GSM.   (08)
7. Explain the protocol architecture of GSM for signaling.   (16)
8. Explain the architecture of GPRS with a neat diagram. (10)
9. What are typical steps for handover on GSM network? (08)

10. Explain the steps involved in the call delivery procedure in GSM network in the following cases:
        (i) GSM mobile terminated call (08)
        (ii) GSM mobile originated call (08)
11. Why are so many different identifiers/addresses needed in GSM?

Give reasons and distinguish between user-related and system related
identifiers.   (08)
12. Explain the services provided by GSM?   (08)
13. Write short notes on
                (i) Mobile management. (08)
                (ii) Connection Establishment. (08)

IT6601 Mobile Computing 2 mark question and answers

UNIT-II

1.Compare HiperLAN and Blue tooth in terms of ad-hoc capabilities, power saving mode, solving hidden terminal problem, providing reliability fairness problem regarding channel access. (16)
2.Write short notes on wireless PAN?   (04)
3.Explain the operation of DFWMAC_DCF with a neat timing diagram.(8)
4. Draw the MAC frame of 802.11 and list the use of the fields.   (8)
5.Describe HiperLAN architectural components and their interactions. (16)
6.Explain the architecture of Wi-Fi in detail.   (16)
7.Explain the system architecture of IEEE 802. 11   (16)
8.Describe the architecture of WiMAX in detail. (16)
9.Compare and Contrast Wi-Fi and WiMax.   (06)
10. Briefly explain about BRAN.   (04)
11. Explain in detail ablout Wireless ATM.   (10)
12. Explain the information bases and networking of adhoc HIPERLAN. (8)
13. Discuss MAC layer Bluetooth system   (08)

UNIT – III

1.Show the steps required for a handover from one FA to another FA including layer-2 and layer-3. Assume 802.11 as layer-2.   (08)
2. Name the ineffiencies of Mobile IP regarding data forwarding from CN to MN. W hat are the optimizations possible?   (08)
3. What are the differences between wired networks and ad-hoc networks related to routing?   (06)
4. What is the need for DHCP? With a state chart explain the operation of   DHCP? (10)
5.List the entities involved in mobile IP and describe the process of data transfer from a mobile node to a fixed node and vice versa.   (08)
6. Why is conventional routing in wired networks not suitable for wireless networks? Substantiate your answers with suitable examples.   (08)
7. Discuss DSDV routing in detail.   (16)
8. Describe how the multicast routing is done in ad-hoc networks. (08)
9. Explain how tunneling works in general and especially for mobile IP using IP-in-IP, MINIMAL,and generic routing encapsulation, respectively. Discuss the advantages and disadvantages of these three methods.(16)
10. How does dynamic source routing handle routing? What is the motivation between dynamic source routing compared to other routing algorithms from fixed networks? (16)
11. Briefly explain about CGSR.   (06)
12. Compare and Contrast about Proactive and Reactive routing protocol(4)

IT6601 Mobile Computing 2 mark question and answers

UNIT IV

1. Explain the mechanisms of TCP that influence the efficiency in mobile environment.   (08)
2. Explain the operation of Mobile TCP.   (08)
3. Compare and Contrast Traditional and Mobile TCP. (04)
4. Why has a scripting language been added to WML? How can this language help saving bandwidth and reducing delay?   (08)
5. Which WTP class reflects the typical web access best? How is unnecessary overhead avoided when using WSP on top of this class of web browsing?   (10)
6. State the requirements of WAP. Explain its architectural components. (16)
7. Explain WML and WML scripts with an example.   (16)
8. What is WTP? Discuss about its classes.   (08)
9. Explain the architecture of WTA.   (08)

UNIT V

1. What are the design and implementation issues in device connectivity aspect of pervasive computing? Explain   (08)
2. Explain the operating system issues related to miniature devices.(08)
3. Explain the various soft surface and semi-soft-surface-based display   system and technologies. (16)
4. Describe the various hardware components involved in pervasive computing devices.   (08)
5. Explain how a pervasive web application can be secured using an 'Authentication Proxy'.   (08)
6. What are the applications of pervasive computing? Discuss any two of   them. (08)
7. Explain how pervasive web applications can be accessed via WAP. (10)