NOORUL ISLAM COLLEGE OF ENGINEERING, Kumara coil
DEPARTMENT OF ECE

2 MARKS & QUESTION- ANSWERS

AN1630- High Performance Communication Networks

Class: S3 M.E COMMUNICATION SYSTEMS

Prepared by : V.ANUSUYA, Lecturer/ECE

AN1630- High performance communication networks

ME communication systems

UNIT: 1 PACKET SWITCHED NETWORKS
PART: A

1.What is the function of physical layer?

Physical layer transmits bits by converting them into electrical or optical signals. Physical layer uses synchronization bits to synchronize the receiver.

2.What is preamble?

To assist the synchronization in the physical layer the transmitter inserts a specific bit pattern called preamble, at the beginning of the packet.

3.What is the function of data link layer?

Data link layer supervises the transmission of packets by the physical layer. It adds a sequence number and error detection bits (CRC).

4.What is encapsulation and decapsulation?

The appending of control fields to a packet is called encapsulation.
The reverse process stripping the control fields is called decapsulation.

5.What are the two layers of data link layer?

Media access control and logic link control are the two layers of data link layer.

6.What is the function of network layer?

Routing is the main function of network layer. The network layer appends unique networks addresses of source and destination.

7. What is the function of session layer?

Session layer supervices the dialogue between two computers. It can setup a connection prior to an exchange of information between the machines.

8.What is re-sequencing?

Re-sequencing may be necessary because packets may not be received in the order in which they are transmitted.

9.Why packetization is needed?

Packetization may be necessary because the size of message may be larger than the size of packets accepted by the network layer.

10. Define syntax?

A set of rules for representing the information is reffered to as syntax. Different computer uses different syntaxes.

11. What is the use of application layer?

Application layer provides frequently needed communication services such as file transfer , terminal emulation , remote login ,directory service and remote job execution.

12.What do you meant by self synchronizing?

Receiver uses the transitions to synchronize to the received signal , such a code is said to be self synchronizing.

13. What is called the efficiency of the MAC?

The fraction of useful time when many nodes want to transmit is called efficiency of the MAC. The fraction of time that the nodes use the transmission channel to transmit the packets successfully is approximately equal to 1/(1+5a). Where a is the ratio of propagation time (PROP) to a packet transmission time (TRANS).

14. What is spanning tree?

A spanning tree in a graph is a sub graph that is a tree and that spans all the nodes.

15.What is VLAN?

A VLAN is a subset of computers and ports with a single switched LAN domain. The subset is defined according to administrative rules.

16.what is a token?

Token is a 3 byte frame that consists of start of frame and access control and an ending delimiter each of one byte long.

17.What do you meant by release after transmission and release after reception?

A node releases the token right after it finishes transmitting its packets is called release after transmission and a node that transmits waits until it has completely received its last packet before releasing the token is called release after reception.

18. What are the three parameters defined by service quality levels of SMDS?

The three parameters are address screening , limit on number of simultaneous packets and information rate.

19. What is called frame relay?

Frame relay is a connection oriented data transport service for public switched networks. The frame relay protocols are modification of X.25 standards.

20. What are the advantages of DQDB MAC protocol?

It is very efficient
There is no loss of capacity due to collision
The head station continuously generates an idle frame

PART: B

1.Explain the seven layers of OSI and IP models?

2. Explain Ethernet with LAN interconnection?

3. Write briefly about token ring?

4.Explain about DQDB and Frame relay?

5.Explain SMDS with neat diagram?

UNIT: 2 ISDN AND BROADBAND ISDN

PART: A

1. What is the main objective of ISDN?

The main objective of ISDN is to offer new digital transmissions services to subscribers.

2. What are the bearer services of ISDN?

The main bearer services are the transport of audio and digitized voice, circuit switched digital channels at rate that are multiples of 64 Kbps,packet switched virtual circuits and connectionless service.

3. What are the principles of ISDN?

1. Support voice and non-voice communication
2. Support switched and non switched application.
3. Reliance on 64Kbps connection
4. Intelligence in the network.

4. What are key objectives of ISDN?

The key objectives are:

1. Standardization
2. Transparency
3. Seperation of competitive functions
4. Least and switched services
5. Smooth migration
6. Multiplexed support

5. What are the benefits of ISDN?

1. Large scale and low cost production.
2. Enhanced service provider.

6. What are the services offered by ISDN?

ISDN provides number of services such as facsimile, teletex, videotext etc.

7. What are the connections supported by ISDN?

1. Circuit switched calls over B or H channel
2. Semi permanent connection over B or H channel
3. Packet switched connection over B or H channel.
4. Packet switched connection over D channel
5. Frame relay calls over B.

8. Functions of addressing

1. Addressing scheme is easy to understand by the user
2. It adapt the existing one
3. It should allow the expansion of sizing bit
4. Number should be a decimal one.

9. What are the features of physical layer?

1. Encoding of bit stream
2. Full duplexing
3. Multiplexing

4 Activation and deactivation of physical circuit
5. Terminal identification.

10. What are the three types of traffics in collision avoidance?
    1. B channel traffic
    2. Incoming B channel traffic
    3. Outgoing B channel traffic.

11. What are the methods used for the control of supplementary services?

    1. Key pad control
    2. Feature key management protocol
    3. Functional protocol.

12. What are the three types of ISDN services?

Bearer services (layer three function), teleservices (4 to 7 layer), supplementary services (conjunction b/w bearer and teleservices).

13. What are the services of LAPD?

    1. Acknowledgement information transfer service
    2. Unacknowledgement information transfer service

14. Draw the frame structure of LAPD

bits bits

Flag(8)	Address(8or 16)	Information(variable)	FCS (16)	Flag (8)

15. Draw the address field format

1 2 3 …….15 16

0	C/R	SAPI	1	TEI

16. Purpose of SS7

SS7 is used to generalize the common channel signaling.

17. List out the characteristics of SS7

    1. Optimizing digital communication
    2. Designed reliability
    3. Suitable for point to point terrestrial link

18. List out the interactive services
    1. Conversational
    2. Messaging

3. Retrieval.

19. What is BISDN?

Broad band ISDN evolved from narrow band ISDN. BISDN is used to increase the data rate for high data rate application. Its also used for universe communicaton.

20. List out the distribution service

1. Distribution without service with out user control
2. Distribution with service with out user control.

PART: B

1. Explain briefly SS7?
2. Explain the layers of ISDN?
3. Explain the protocols of BISDN?
4. Explain ISDN overview?
5. Explain ISDN services?

Unit: 3 ATM AND FRAME RELAY

PART: A

1**.** What is ATM?

Asynchronous Transfer Mode (ATM) is a method for multiplexing and switching that supports a broad range of services. ATM is a connection-oriented packet switching technique that generalizes the notion of a virtual connection to one that provides quality-of-service guarantees.

2. What are the main features of ATM?

1. The service is connection-oriented, with data transfer over a virtual circuit.
2. The data is transferred in 53 byte packets called cells.
3. Cells from different VCs that occupy the same channel or link are statistically multiplexed.
4. ATM switches may treat the cell streams in different VC connections unequally over the same channel in order to provide different qualities of services (QOS).

3. What are the traffic parameters of connection-oriented services?

1. Peak Cell Rate (PCR)
2. Sustained Cell Rate (SCR)
3. Initial Cell Rate (ICR)

4. Cell Delay Variation Tolerance (CDVT)
5. Burst Tolerance (BT)
6. Minimum Cell Rate (MCR)

4. What are the quality service (QoS) parameters of connection-oriented services?

1. Cell Loss Ratio (CLR)
2. Cell Delay Variation (CDV)
3. Peak-to-Peak Cell Delay Variation (Peak-to-Peak CDV)
4. Maximum Cell Transfer Delay (Max CTD)
5. Mean Cell Transfer Delay (Mean CTD)

5. Types of delays encountered by cells

1. packetization delay (PD) at the source
2. transmission and propagation delay (TD)
3. queuing delay (QD) at each switch
4. affixed processing delay (FD) at each switch
5. a jitter compression or depacketization delay (DD) at the destination.

6. What do you mean by ATM addressing?

An ATM address indicates the location of an ATM interface in the network topology. This means that ATM address is not portable. The prefix of an address is associated with a group of interfaces with the same prefix.

7. Types of ATM network interface.

Two most important interfaces are:
1. user-network interface (UNI)
2. network-network interface or network-node interface (NNI).

8. What do you mean by user-network interface (UNI) and network-network interface or network-node interface (NNI)?

UNI is the interface between an ATM end system and an ATM switch, NNI is the interface between two ATM switches.

9. What are the two sublayers of AAL?

1. Convergence Sublayer (CS)
2. Segmentation and Reassembly Sublayer (SAR).

10. What is the function of CS?

The Convergence Sublayer (CS) converts the information stream into four types of packets streams, called AAL Type1, Type2, Type3/4, and Type5.The packet formats match the requirements of the information stream.

11. What are the subdivisions of CS?

1. upper, service-specific or SSCS sublayer
2. lower, common part or CPCS sublayer.

12. What do you mean by Type1 traffic?

Type1 traffic is a traffic generated at constant bit rate, and it is required to be delivered at the same rate (with a fixed delay).

13. What is meant by traffic policing?

In management and control the network must monitor the data transfer to make sure that the source also conforms to the QoS specification and to drop its cells as appropriate, is said to be a traffic policing.

14. What are the functions of management and control?

1. fault management
2. traffic and congestion control
3. network status monitoring and configuration
4. user/network signaling.

15. What are the layers of BISDN reference model?

User plane, Control plane, Layer management plane, Plane management plane.

16. What are the basic tasks required for internetworking over ATM?

Two basic tasks are:

1. Encapsulation of the protocol data unit
2. Routing of bridging of PDU.

17. What are the functions of user plane?

It compromise the functions required for the transmission of user information for instance, for an internet protocol over ATM, these layers could be HTTP/TCP/IP/AAL5.

18. What are the three strategies of IP over ATM?

The three strategies are

1. The classical IP model
2. The short cut models
3. The integrated models.

19. What are the basic signaling function between the network and user?

The basic signaling function between the network and user are as follows:

1. The user requests a switched virtual connection
2. The network indicates whether the request is accepted or not
3. The network indicates error conditions with a connection.

20. What are the two basic tasks required for internetworking over ATM?

The first is encapsulation of the protocol data units, and the second is routing or bridging of these PDUs.

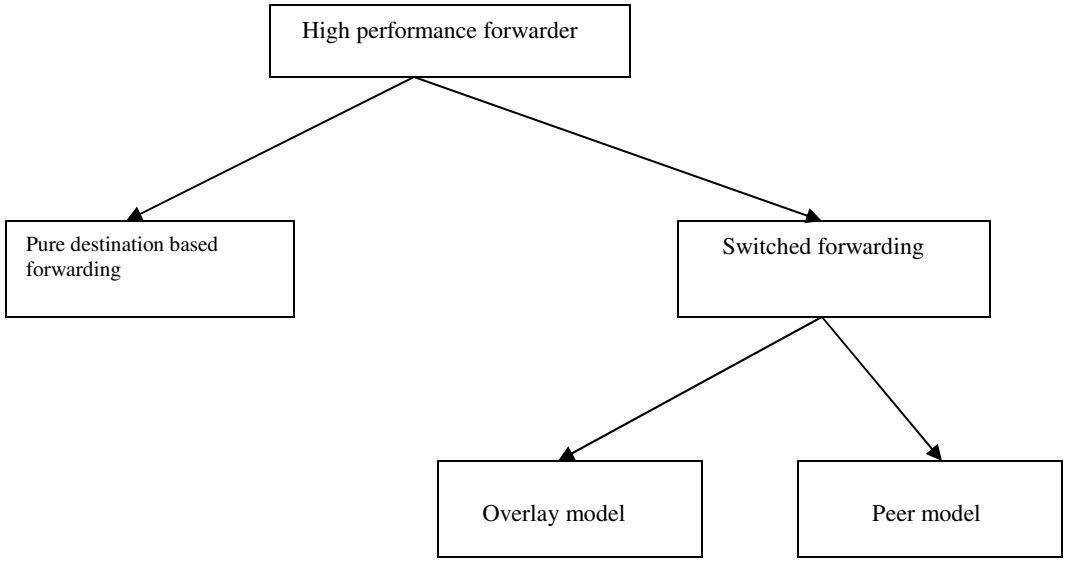
PART B:

1. Explain AAL layer?
2. Explain management and control in ATM
3. Write in detail the congestion control.
4. Explain in detail internetworking with ATM?
5. Explain frame relay via ATM?

UNIT: IV ADVANCED NETWORK ARCHITECHTURE

PART A

1. Draw the IP forwarding taxonomy?



2. What do you mean by overlay model?

In the overlay model, ATM switches are not aware of IP addresses and IP routing protocols. This model overlays and IP network on to an ATM network, essentially creating two network infrastructures with two addressing schemes and two routing protocols. An ARP is required to map from one address to another.

3. What do you mean by peer model?

The peer model uses the existing IP addresses to identify end systems and uses IP routing protocols to set up ATM connections. It does not require ARP and thus simplifies address administration.

4. Define LIS?

The part of an ATM network that belongs to the same IP subnetwork is called a logical IP subnetwork(S).

5. What are the components of ELAN?

1. A set of LAN emulation clients
2. LAN emulation server
3. Broadcast and unknown server
4. LAN emulation configuration server
5.

6. Define NHRP?

Next Hop Resolution protocol enables a station connected to an ATM network to resolve an ATM address from an IP address. The main objective is to find most efficient shortcut path through the ATM network so that intermediate routers can be bypassed

.

7. Define MPLS?

Multi Protocol Label Switching is to standardize a label switching paradigm that integrates layer 2 switching with layer 3 routing. The device that integrates routing and switching functions is called a Label Switching Router (LSR).

8. Mention the main features of label switching?

1. Low cost hardware implementation
2. Scalability to very high speeds
3. Flexibility in the management of traffic flows

9. State the disadvantages of overlay model?

Overlay model of IP over ATM has the disadvantage that two network infrastructures need to be managed, each with its own addressing, routing and management constraints.

10. What do you mean by a Label Switched Path (LSP)?

A sequence of Label Switching Routers (LSR) that is to be followed by a packet is called LSP.

11. What are the resources used by an integrated service model?

Integrated service model requires resources such as bandwidth and buffers to be explicitly reserved for a given dataflow to ensure that the application receives its requested QoS.

12. What do you mean by guaranteed service?

The guaranteed service in the internet can be used for applications that require real time service delivery. For this application data that is delivered to the application after a certain time is generally considered worthless. Thus guaranteed service has been designed to provide a frame bound on the end to end packet delay for a flow.

13. What do you mean by controlled-load service?

The controlled-load service is intended for adaptive applications that can tolerate some delay but that are sensitive to traffic overload conditions. These applications typically perform satisfactorily when the network is lightly loaded but degrade significantly when the network is heavily loaded.

14. Define RSVP?

Resource Reservation Protocol was designed as an IP signaling protocol for the integrated services model. RSVP can be used by a host to request a specific QoS resource for a particular flow and by a router to provide the requested QoS along the paths by setting up appropriate states.

15. What are the features of RSVP?

1. Performs resource reservations for unicast and multicast applications
2. Requests resource in one direction from a sender to a receiver

3. Requires the receiver to initiate and maintain the resource reservation.
4. Maintains soft state at each intermediate router
5. Does not require each router to be RSVP capable
6. Supports both IPv4 and IPv6
7.

16. What is the information's present in the path message?

1. Phop
2. Sender template
3. Sender Tspec
4. Adspec
5.

17. Define soft state?

When a state is not refreshed within a certain timeout, the state is deleted. The type of state that is maintained by a timer is called a soft state.

18. Draw the RSVP header format?

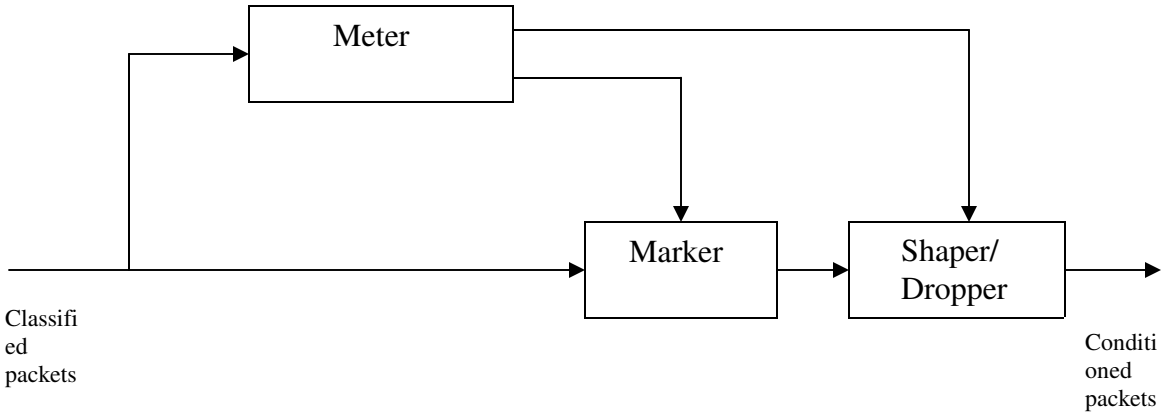
0 4 8 16 31

Version	Flags	Message type	RSVP checksum
Send_TTL		Reserved	RSVP length

19. Define SLA?

Service Level Agreement is a service contract between a customer and a service provider that specifies the forwarding service that the customer will receive. An SLA includes a Traffic Conditioning Agreement (TCA) that gives detailed service parameters such as service level, traffic profile, marking and shaping. SLA can be static or dynamic.

20. Draw the functional diagram of traffic conditioner?



PART B

1. Describe overlay model?
2. Describe MPLS?
3. Explain integrated service in the internet?
4. Explain RSVP?
5. Explain differentiated services?

Unit 5 BLUE TOOTH TECHNOLOGY

PART A

1.What is bluetooth?

Bluetooth refers to an open specification for a technology to enable short – range wireless voice and data communications anywhere in the world.

2.What is the range of RF communications in frequency spectrum?

2.4 GHz

3.Define baseband layer

The baseband layer defines the master and slave roles for devices-the device that initiates a connection process becomes the master of the link, while the other device becomes the slave.

4.What is the advantage of using ultimate headset?

1.It supports mobility. The user of headset is not physically tied to the audio device and thus is free to roam about the area while keeping the connection intact.

2.the ability to use the same headset with multiple devices.

5.What purpose the RFCOMM protocol is used in Blue tooth?

It facilitate the use of serial communications over Blue tooth wireless links the protocol defines a serial port abstraction called RFCOMM. RFCOMM presents a virtual serial port to applications; this facilitates the easy migration of applications modeled for cabled serial communications to the realm of wireless serial communications.

6. What are the key functions of Blue tooth base band?

These include Pico net and device control functions like connection creation, frequency hopping sequence selection and timing; modes of operation such as power control and secure operation; and medium access functions like polling, packet types, packet processing and link types.

7. What is meant by Pico net? What is the primary role of master in it?

Pico net comprises a shared communications channel through which members of the Pico net communicate.

The primary role of master is

1. Which frequency hopping sequence the members of the Pico net shall follow

2.When frequency hops shall occur, thus defining the timing foundation for timed events in the Pico net

3.Which particular frequency is the 'current' frequency?

8.What are the operational states of a blue tooth device ?

Connected state, Standby state, inquiry state.

9.What are the two fundamental elements in Blue tooth?

1.the Blue tooth address

2.the Blue tooth device clock.

10.What is mean by Blue tooth clock?

Blue tooth device has a free running 28-bit clock. The clock is never adjusted and is never turned off. The clock has an accuracy of 20ppm.

11.What are the contents included in the Link control packet?

1.The ID packet, used in inquiries and pages, that consists of only the access code;

2.the null packet

3.the POLL packet

12.What is meant by Link encryption?

To protect the privacy of the data flowing over a Blue tooth link, the link can be encrypted.Encrypytion in Blue tooth wireless technology is based on a 1bit stream cipher, whose implementation is included in the specification.

13. What is meant by service discovery protocol?

Service discovery is a process by which devices and services in networks can locate , gather information about and ultimately make use of other services in the network .

14. What are the different types of power modes ?

Sniff mode, Hold mode , Park mode

15. How does encryption works?

1. The master becoming ready to receive encrypted data
2. A slave becoming ready to transmit and receive encrypted data
3.The master becoming ready to transmit encrypted data.

16. What is meant by beacon channel?

In order to maintain synchronization with the piconet and to facilitate the readmission of parked devices in the piconet the master defines a low bandwidth called beacon channel which consist of the periodic transmission of broadcast packets.

17. What are the requirements for bluetooth serial communications?

1. Multiplexed serial communication
2. RS232 signal compatibility
3. Remote status and configuration
4. Internal and external serial port
5. Data frame adaptation
6. Connection establishment and termination
7. Multiplexing
8. Applicability flow control

18. What is meant by service registry?

The service provider needs to maintain a list of service records that describe the service it provides .This list is called service registry.

19. What are the informations included in a service record?

A service record consist of collection of service attributes containing information about the class of service, information about the protocol stack layer that are needed to interact with the service , and other associated information such as human readable descriptive information about the service.

20. What are the SDP protocol transactions?

1. Client sends a request to search for service(s) of interest ; server respond with handles to services that match the request.
2. Client uses the handle(s) obtained in step 1 to form a request to retrieve additional service attributes for the service(s) of interest.

PART B

1. Explain the antenna sections in blue tooth?
2. Explain SDP protocol?
3. Explain the logical link control and adaptation protocol?
4. Explain RFCOMM?
5. Explain wireless access protocol and telephony control protocol?