

**NOORUL ISLAM COLLEGE OF ENGINEERING,
KUMARACOIL**

**DEPARTMENT OF ELECTRONICS AND COMMUNICATION
ENGINEERING**

SUBJECT CODE: AN 1628

INTERNETWORKING MULTIMEDIA

(FOR SECOND SEMESTER ME COMMUNICATION SYSTEMS)

TWO & 16 MARK QUESTIONS-ANSWERS

PREPARED BY

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TWO MARKS

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1. What is Audio resolution?

Audio Resolution determines the accuracy with which a sound can be digitized so that the recording is more like its original.

2. Give the size (in bytes) of the digital recording

(i) For monophonic

$\text{Sampling rate} \times \text{duration of recording in secs} \times (\text{bit resolution} / 8) \times 1.$

(ii) For stereophonic

$\text{Sampling rate} \times \text{duration of recording in secs} \times (\text{bit resolution} / 8) \times 2.$

3. Give some basic sound editing operation?

Multiple tracks

Trimming

Splicing and assembly

Volume adjustments

Format conversion

Resampling

Equalisation

Time_stretching

4. What is MIDI and what are necessary for creating a MIDI.

MIDI or the Musical Instrument Digital Interface is recording the music. It can be done only if there is any knowledge of music. We need a sequence software and sound synthesizer.

5. Advantage of MIDI over Audio.

MIDI files are much more compact than audio files.

Because they are small easily embedded in WebPages.

MIDI files sound better than digital audio files.

Changing the length of MIDI file is possible

6. Give the Disadvantages of MIDI?

Because MIDI doesn't represent sound but musical instrument the playback will be accurate only if identical play back device is used for production.

MIDI cannot easily be used to playback-spoken dialog.

7. Why do we go for Digital Video Compression?

To digitize and store a 10-second clip of full-motion video it requires transfer of enormous amount of data reproducing just digital video component at 24 bit requires

1MB of computer data .To reduce the requirement of memory space we go for digital Video Compression.

8.What is a Codec?

Codec is an algorithm used to compress a video for delivery and then decode if in real for fast playback.

9.Compare composite analog video and component analog video?

Composite analog video

i. Combines luminance and chroma

Information from video signal.

ii.lowest quality video and most

Susceptible to generation loss

Component analog video

i. Separate the luminance and chroma

Information from video signal.

ii.Quality of video improved and no

generation loss

10.What is a DV format?

A DV format is a component digital format, but it takes samples at smaller bit depths and compresses the video, allowing the use of smaller tape widths.

11.What are bridges and gateways used for?

If two LAN's are in close vicinity they can be connected through devices called bridges.

If LAN's are located far apart then they may be connected via. WAN or MAN links and devices called gateways.

12.Why internetworking is done?

Better matching of needs.

Improved reliability

Enhanced performance

Easy of management

13. What is the function of repeater?

Input the signal on one end

Remove noise

Regenerate the original signal

Out the signal on the other end

14.What are the different types of repeaters?

Simple repeater: A repeater that connects similar types segments

Two-port repeater: A two-port repeater has two bi-directional ports and two amplifiers. One amplifies and other copies signal from one segment to other.

Multipoint repeater: Used to connect multiple segments of LAN.

Transceiver: A transceiver is a repeater cable of connecting two segment using different types of signals.

15. How are bridges classified?

Depending on functionality bridges are classified as.

Transparent bridge: connect two similar networks

Translating bridges: connects two dissimilar networks.

iii.Encapsulating bridge: Also connects two dissimilar networks such as Ethernet and FDDI

iv.source routing bridge: It is a bridge with routing capability.

16.Differentiate bridges and routers in routing.

Bridges	Routers
1.operate at layer2	1.operate at layer 3
2.looks at the destination address of every packet that reaches the bridges over shared medium.	2.A router process only those packets that have been send to the router to find a path through network.

17.What is Dithering?

Dithering is a process whereby the color value of each pixel is changed to the closest matching color value in the target palette.

18.Define Bitmap.

A bitmap 1 or 0 is the only two digits is referred to as binary.

A map is a two dimensional matrix of these bits. A bitmap is a simple matrix of the tiny dots that form an image and are displayed on a computer screen or printed.

19.What are the various factors that affect synchronization?

The various factors are:

1.Delay

2.Jitter

3.Skew

4.Error rate

20.Define composite and component analog video.

Composite video combines the luminance and chroma information from the video signal. It produces the lowest quality video and is most susceptible to generation loss.

21What is traffic shaping?

The approach to congestion management widely used in ATM network is called traffic shaping.

22. What are the two unique design features of IPV6?

To process packet faster

To increase throughput

23. What are the components of delay in networks?

Processing delay

Networking delay

24. Define jitter.

Packets use different paths. This causes instantaneous time difference between actual presentation and desired presentation time

25. What are the advantages of IPV6 over IP V4?

Header simplification

Longer address

Better support for options

26. What are broadband services?

In broadband services transmission and switching is more flexible. Broad band is up to 2Mbps. It was developed in 1980

27. Define throughput.

Capacity of the channel for successful reception.

Through put = (no. of bits taken to transfer)/(time taken to transmit the bits)

28. What is buffer management?

The flow of information is from server to client. The transmit bit is equal to the channel bits + the buffer size bits. Balancing transmit bits, channel bits and buffer size bits is called buffer management.

29. What are the techniques used in video over IP?

Video broadcasting

Video on demand

Video conferencing

30. What are the main features of ATM?

Asynchronous Transfer Mode. (ATM) is a self-switched network. The cell size is 53 bytes. 48 bytes are allocated for data and 5 bytes for header.

31. Give the QoS parameters.

Bandwidth requirement, peak Bandwidth requirement, delay and loss probability.

32. What are the objectives of resource reservation?

To ensure the application requirements (average bandwidth, end-to- end delay etc) are satisfied.

33. What are the client scheduling issues?

VCR control operations
Common data streams
Time varying work load.

34. What are the channel scheduling objectives?

Minimize long term reneging probability
Minimize short term peak reneging probability
Minimize average waiting time
Fairness

35. Define near video on demand systems.

A simple batching policy is for the multimedia server to periodically transmit popular video material at preannounce time. Such systems are referred to as near video on demand systems.

36. What are the elements present in index?

Name
Index element
Annotations
Header field

37. What is caching?

Temporary storage of frequently used data is termed as caching

38. Why ATM is named so?

It uses Asynchronous Time Division Multiplexing of data packets called cells of fixed size.

39. Write two traditional methods used in multicast?

Repeated transmission
Broadcast

40. What is meant by datagram network?

Datagram network means that anyone can send a packet to a destination without having to pre-computed a path.

41. What is meant by call-set-up protocol?

Call set up protocol simply addresses the packet to the right place, and sends it. That is the sending host need not be aware of or participate in the complex route calculation; not need it take part in a complex signaling or call set up protocol.

42. Summarises the IP multicast service model

Senders send to a multicast address
Receivers express an interest in a multicast address

Routers conspire to deliver traffic from the senders to the receivers.

43. What is Reverse Path Broadcast?

When a sender first starts sending, traffic is flooded out through the network. A router may receive the traffic along multiple paths in different interfaces, in which case it rejects any packet that arrives in any interface other than the one it would use to send a unicast packet back to the source. In this way each link in the whole network is traversed at most once in each direction, and the data received by all routers in the network. So far, this describes Reverse Path Broadcast.

44. Write Multicast routing protocol?

DVMRR- the distance vector multicast routing protocol
DM-PIM- dense-mode protocol independent multicast.

45. Solution for the problem of centre based trees?

How to perform the mapping from group address to centre address.

How to choose the location of the centre so that the distribution trees are efficient

How to construct the tree given the centre address.

46. Performance of Multicast Scoping

Multicast scoping can currently be performed in two ways which are known as TTL scoping and administrative scoping .

47. What is TTL scoping?

When an IP packet is sent, an IP header called time to live (TTL) is set to a value between zero and 255.

48. What is Administrative scoping?

Administrative scoping allows the configuration of a boundary by specifying a range of multicast address that will not be forwarded across that boundary in either direction.

49. What is reliable multicast?

Reliable multicast means a single protocol at a single 'layer' of a protocol stack, typically the transport layer, that can act as any layered protocol can: provide common functionality for applications that need it.

50. What is Fate sharing?

Fate sharing in unicast applications means that so long as there is a path that IP can find between two applications, then TCP can hang on to the connection as long as they like.

51. What is TCP adaption algorithm?

Adaption in TCP is both to the round-trip time, in order to dynamically tune retransmit timers for reliable delivery, and of the send rate in order to adapt to the achievable transfer rate between the sender and receiver. The same techniques can

often be applied in other protocols in particular for multimedia services to operate over time-varying network services.

52. What are the two purposes for adaption to delay at the receiver?

Adaptive play-out buffer to smooth play –out so that a fixed-rate media device is not starved of data, or overrun.

2. Synchronization of streams from different sources can be achieved at a receiver.

53. Write the reasons for network delay in TCP algorithm?

Other traffic causes the long-term average to vary.

Bursts of one's own traffic cause ones own delay to vary quickly.

54. What is the use of RTCP?

RTCP is the real time transport protocol, which may be used as a lightweight companion to RTP to convey a number of statistics and other information about flow between recipients and senders.

55. Write RTCP packet format?

SR: Sender Report for transmission and reception statistics from participants that are active senders.

RR: receiver Report for reception statistics from participants that are not active senders.

SDES: Source Description Item including CNAME

BYE: Indicates End of participation

APP: Application specific functions.

56. What is goal of RTCP?

The intention and original design goal of RTCP messages was for them to act as a distributed source of lightweight session data that would allow a range of highly fault-tolerant and reasonable scale mechanisms to be built including:

Membership

Loss statistics

57. What is Peer to Peer computing?

The term 'Peer o Peer' refers o a class of systems and application that employ distributed resources to perk a critical function in a decentralized manner.

58. Advantages of Peer to Peer networking?

improving scalability by avoiding depending on centre points

Eliminating the needs for costly infrastructure by enabling direct communication among clients.

Enabling resource aggregation

59. Goals of Peer to Peer?

As with any computing system the goal of peer to peer system is support applications that satisfy the needs of users.

Cost sharing/ reduction
Improved scalability
Resource aggregation and interoperability
Increased autonomy
Dynamism
Enabling ad-hoc communication and collaboration.

60. Characteristics of Peer to Peer?

Decentralization
Scalability
Anonymity
Self organization
Cost of ownership
Ad-hoc connectivity
Performance
Security.

61. What are the three phases included in generic conference establishment ?

find out if those invited to conference are interested in participation
Orchestrate whichever media connections are requested.
Report the status of the connection attempts to all those involved.

62. What is meant by Video conferencing?

Video conferencing implies transmission of live video between two or more communicating sites.

63. What are the important aspects of video conferencing and their implementation options?

communication direction
physical connection
interaction between participants

64. What are the applications of Video conferencing?

virtual corporation
healthcare-Telemedicine
education, entertainment and edutainment

65. Write the multimedia conferencing standards?

H.320(1990)
H.321(1995)
H.322(1995)
H.323(1996)
H.324(1995)
H.310(1996)

66. What is MIME?

MIME (Multipurpose Internet Mail Extensions is the extension) of RFC 82 framework. MIME overcomes the problems and limitations of the use of SMTP and RFC 822 for electronic mail.

67. Write any two Limitation of SMTP/RFC 822 scheme?

SMTP cannot transmit executable files or other binary objects. A number of schemes are used for converting binary files into a text form that can be used by SMTP mail systems.

SMTP servers reject mail message over a certain size.

68. Write MIME header format?

MIME -Version

Content-type

Content-transfer-encoding

Content-ID

Content-Description

69. What is NBMA network?

NBMA (Non-Broadcast Multiple Access) network is one of the four network types in the OSPF(Open Shortest Path First) communication protocol. NBMA is used to accurately model X.25 and frame relay environment in multiple access networks where there are no intrinsic broadcast and multicast capabilities.

70. What is NBMA shortcut?

A shortcut is an NBMA level call (vc) directly connecting two IP endpoints that are logically separated by one or more routers at the IP level.

33. Multicasting in NBMA networking?

non broadcast multiple access network

frame relay or ATM network that connect many routers together

71. What is the objective of the MPEG-7 standard?

The objective of MPEG-7 is to set a standard for the description of multimedia material; this includes speech, audio, video, still pictures and 3D models.

72. What are the characteristics of MPEG-7?

Its generality-The capability to describe content from many application environments

Its object -based data model-The capability to independently describing individual objects within a scene

Its integration of low and high level features /descriptors into single architecture-The capability to combine the power of both types of descriptors

Its extensibility provided by the DDL-The capability to keep growing to be extended to new application areas, to answer newly emerging needs and to integrate novel description tools.

73. Define the major functionalities in MPEG-7

Systems-The tools that are needed to prepare MPEG-7 descriptions for efficient transport and storage and to allow synchronization between content descriptors.
DDL-The language for defining new descriptors schemes and perhaps also new descriptors

Audio-The descriptors and description schemes dealing with only audio descriptors.

Visual-The descriptors and description schemes dealing with visual descriptors.

Multimedia Description Schemes- The descriptors and description schemes dealing with generic features and multimedia descriptions

Reference software- a software implementation of relevant parts of the MPEG-7 standard.

Conformance-Guidelines and procedures for testing conformance of MPEG-7 implementations.

74. Describe the function of DDL?

The DDL forms a core part of the MPEG-7 standard, the DDL defines the syntactic rules to express and combine DSs and Ds. It has to be able to express spatial, temporal, structural and conceptual relationships between the elements of Ds and DSs.

75. Define temporal interpolation D?

The temporal interpolation D describes a temporal interpolation using connected polynomials. This can be used to approximate multidimensional variable values that changes with time. Such as an object position in a video.

76. Define the description tools of MPEG-7 MMDS

Content descriptors-Representation of perceivable information

Content management-Information about media features and creation of the use of the audiovisual content

Content organization-representation of the analysis and classification of several audiovisual contents.

Navigation and access-specification of summaries and variations of the audiovisual content

User interaction-Description of user preferences pertaining to the consumption of the multimedia material

77. What is XM & explain its applications?

XM is reference software, its applications are divided into two types: the server applications and the client applications. The server applications are used to extract the D data from media data. The extracted D data is coded and written to an MPEG-7 bit stream. The client applications perform the search in the MPEG-7 coded database by computing the distance between the query D and all reference Ds of the database.

78. What are the applications of MPEG-7?

Digital libraries-This include video libraries, image catalogs, musical dictionaries, future home multimedia databases.

Multimedia directory services-An examples are yellow pages.

Broadcast media selection-This includes radio channel and Internet broadcast search and selection.

Multimedia editing-personalized electronic news services and media Authoring

79.Describe the aims of MPEG-21

To understand if and how various components fit together

To discuss which new standards may be required, if gaps in the infrastructure exist and when the above two points have been reached.

To accomplish the integration of different standards.

80.What is the goal of MPEG –21?

The goal of MPEG-21 is to enable transparent and augmented use of multimedia resources across a wide range of networks and devices

81.What are the technologies needed to satisfy MPEG-21 goal?

Digital item declaration

Content representation

Digital item identification and description

Content management and usage

Intellectual property management and protection

Terminal and networks

Event reporting

82.List the requirements for the standardized multimedia framework?

To satisfy the experience of all types of users in the multimedia framework through the extension of all existing members of the value chain

To achieve interoperability of systems through the integration of the multimedia framework.

To provide the means to protect the intellectual properties of all categories of users

To ensure that the privacy of users will be respected.

83.What are the integration provided by digital item identification &description in MPEG-21?

Accuracy, reliability and uniqueness of identification

Seamless identification of any entity regardless of its nature or type of granularity.

Persistent and efficient methods for the association of identifiers with digital items

Security and integrity of identification and description

Automated processing of rights transactions and content location, retrieval and acquisition.

84. Define content representation in MPEG-21

MPEG-21 provides content representation technology to represent efficiently any content of all the relevant data types of natural and synthetic origin combination thereof in a scalable and error-resilient way. The various elements in a multimedia scene will be independently accessible, synchronizable and will allow various types of interaction.

85. Define audiovisual system?

Audiovisual services provide real-time communication of speech together with visual information between two or more end-users. The visual information is typically moving pictures, but may be still pictures, graphics or any other form.

86. Comment on the standard guaranteed QoS LAN systems in audiovisual systems?

Standard H.322-Guaranteed QoS LAN systems, the proposal that ITU should have a recommendation covering the provision for LANs and for video telephony and video conferencing facilities. Originally it was known as Isochronous Ethernet (ISO-Enet, but renamed ISLAN 16-T. It can be considered as an upgrade to the conventional 10 Mb/s Ethernet.

87. Define the objective of MPEG-4

MPEG-4 is a standard designed for representation and delivery of multimedia information across a variety of transport protocols. It includes interactive scene management, visual and audio representations and systems functionality like multiplexing, synchronization and object –descriptors framework.

88. Define DMIF?

DMIF is a general applications and transport delivery framework specified by MPEG-4. DMIF's main purpose is to hide the details of the transport network from the user as well as to ensure signaling and transport interoperability between end systems. In order to keep the user unaware of underlying transport details: MPEG-4 defined an interface between user –level applications and DMIF called DAI.

89. What are the characteristics of RTP?

The RTP time stamp corresponds to the presentation time of the earliest access unit is within packet.

RTP packets have sequence numbers in transmission order.

The MPEG-4 time scale is the time –stamp resolution in the case of MPEG-4 systems and must be used as the RTP time scale

Streams should be synchronized using RTP techniques

98. What are the audio-visual standards?

H.320 protocol suite. (H.322, H.323)

These are called video conferencing standards.

99. What are the multicast routing protocols?

MOSPF

DVRMP

These are Protocols used in multicast transmission

100. What are the components of MPEG-4?

The MPEG-4 system developed is an end-to-end system consisting of an MPEG-4 server the DMIF component for signaling and session management on an IP network and an MPEG-4 client for media playback and rendering.

PART B

1. Explain multimedia networking in detail
2. Describe the audio compression and video compression in detail
3. Write short notes on digital audio
4. Write short notes on digital video and MIDI
5. Mention the network requirements of audio and video transmission
6. Write short notes on Resource reservation
7. Explain in detail about Voice and video over IP
8. Explain High Speed switching technique
9. Explain in detail about ATM technology
10. Write short notes on broadband services and IPV6
11. Explain in detail about multicast routing addressing
12. Write short notes on NBMA networks and MIME
13. Explain in detail about video conferencing. Mention its applications
14. Explain in detail about RTP and RTCP
15. Explain in detail about Centralized and distributed conference control
16. Write short notes on light weight session philosophy and distributed virtual reality
17. Explain in detail about the major functionalities in MPEG-7
18. Write short notes on MPEG-21
19. Describe MPEG-4 video transport across the internet
20. Write short notes on packet voice and packet video.
21. Write short notes on scalable rate control mechanism
22. Write short notes on layered video coding
23. Explain in detail about multimedia transport across ATM networks
24. Explain in detail about multimedia transport across Wireless networks
25. Explain in detail about multimedia transport across IP networks

