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The Power of Knowing



Exam : 920-180

Title : Real Time Networking

Ver : 01-30-09

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**QUESTION 1**

Which three components are H.323 endpoints? (Choose three.)

- A. Gatekeeper
- B. Terminal
- C. Gateway
- D. Multipoint Control Unit (MCU)
- E. Security Relay

Answer: B,C,D

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**QUESTION 2**

Which statement is true concerning SIP protocol?

- A. SIP is based on H.323
- B. SIP is an extension of HTTP/1.1
- C. SIP is a component of HTTP/1.1
- D. SIP is based on a request/response transaction model

Answer: D

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**QUESTION 3**

In an H.248 connection model, which is the definition of a context?

- A. Contexts represent the different phases of call setup.
- B. Contexts represent the segregation of call server domains.
- C. Contexts represent associations between collections of terminations.
- D. Contexts represent the difference between signaling traffic, bearer traffic and administration traffic for a device.

Answer: C

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**QUESTION 4**

Which type of protocol is H.248?

- A. a QoS Protocol
- B. a Media Gateway control protocol
- C. a Peer-to-Peer call control protocol
- D. a Real-Time packet encoding protocol

Answer: B

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**QUESTION 5**

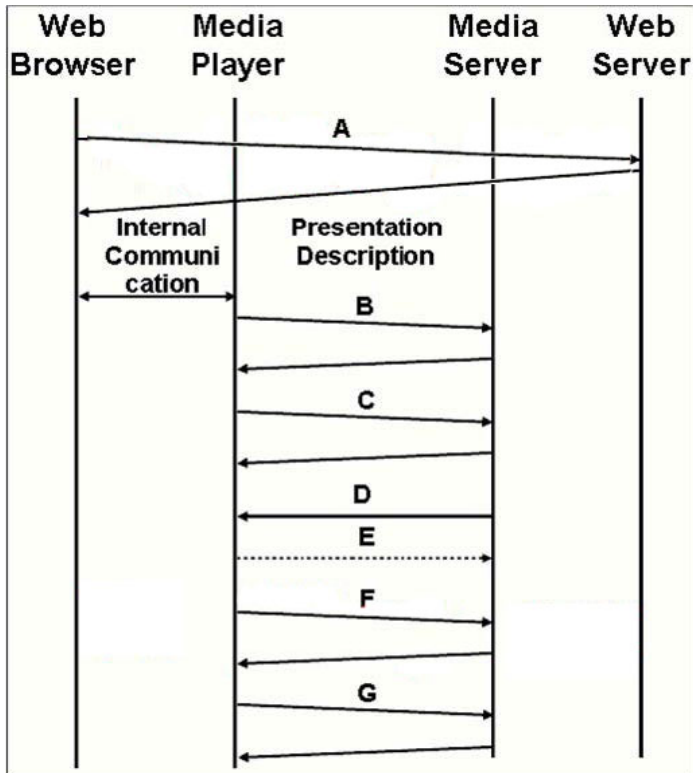
Which protocol is used for establishing media streams in H.323?

- A. G.711
- B. H.225.0
- C. H.245
- D. H.450

Answer: C

### QUESTION 6

Exhibit:



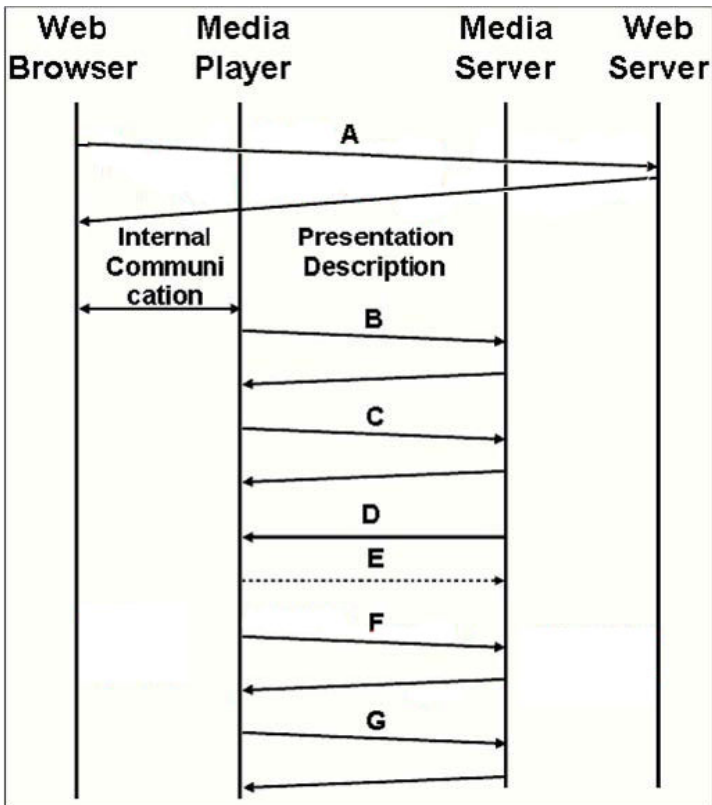
In a typical RTSP operation what type of protocol will be used with transaction A?

- A. RTP
- B. RTCP
- C. HTTP
- D. RTSP

Answer: C

### QUESTION 7

Exhibit:



In a typical RTSP operation what type of protocol will be used with transaction C?

- A. RTP
- B. RTCP
- C. HTTP
- D. RTSP

Answer: D

### QUESTION 8

Which feature is common to both TCP and RTP?

- A. multicast
- B. error recovery
- C. session protocol
- D. reliable connection
- E. flow/congestion control

Answer: C

### QUESTION 9

Several RTP streams can be combined into a single stream. There are two sessions with SSRC=6 and SSRC=23. Which are possible new session numbers? (Choose two.)

- A. 6

- B. 17
- C. 23
- D. 53

Answer: B,D

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**QUESTION 10**

Which application can NOT be implemented using SUBSCRIBE/NOTIFY when using SIP protocol?

- A. Codec Re-negotiation
- B. Keypad Press Reporting
- C. Message Waiting Indication
- D. Presence (i.e., "Friends list")

Answer: A

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**QUESTION 11**

How do end users connect to an Optical Ethernet network?

- A. through a DS1 interface
- B. through a DS3 interface
- C. through an optical SONET interface
- D. through a variety of Ethernet interfaces

Answer: D

---

**QUESTION 12**

What is a 3G cellular technology?

- A. Advanced Mobile Phone Service (AMPS)
- B. Global System for Mobile Communications (GSM)
- C. General Packet Radio Service (GPRS)
- D. Code Division Multiple Access (CDMA)
- E. Universal Mobile Telecommunications Service (UMTS)

Answer: E

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**QUESTION 13**

When is Multiprotocol Label Switching (MPLS) local recovery chosen over MPLS global recovery?

- A. When faster recovery is sought.
- B. When too few Label Switch Paths (LSPs) are setup.
- C. When insufficient bandwidth is available in the network.
- D. When the network is NOT very meshed (small degree of connectivity).

Answer: A

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**QUESTION 14**

What technology allows a SONET ring to act like the backplane of an Ethernet switch?

- A. TDI
- B. STS
- C. RPR
- D. VLAN

Answer: C

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**QUESTION 15**

Which tasks must be performed by NAT devices to support H.323 over UDP? (Choose two.)

- A. recalculation of the H.323 Security code
- B. recalculation of the transport layer checksum
- C. alteration of IP addresses embedded in the H.323 packet
- D. H.323 Gatekeeper tasks (i.e. NAT must also be H.323 Gatekeeper)

Answer: B,C

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**QUESTION 16**

Which is a difference between basic NAT and NAPT?

- A. NAPT creates dynamic bindings but basic NAT does NOT.
- B. NAPT supports full cone operation but basic NAT does NOT.
- C. Basic NAT does stateful packet inspection and NAPT does NOT.
- D. Basic NAT has a one-to-one mapping of IP addresses and NAPT supports a many-to-one mapping.

Answer: D

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**QUESTION 17**

Which protocols are used to detect the failures that impact Label Switch Path (LSP) traffic?

- A. RSVP-TE Hello and ITU-T Y1711
- B. OSPF-TE keep-alive and ATM PNNI
- C. RSVP-TE Hello and OSPF keep-alive
- D. ITU-T Y1711 and OSPF-TE keep-alive

Answer: A

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**QUESTION 18**

The FRF.11 specification is associated with which aspect of real-time networking?

- A. Frame Relay QoS
- B. Frame Fragmentation
- C. Frame Relay Voice
- D. Frame Relay Service Category

Answer: C

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**QUESTION 19**

A customer currently is running a SONET UPSR network and would like to upgrade to RPR. How does RPR improve bandwidth efficiency over SONET UPSR?

- A. RPR uses VLANs
- B. RPR has Spatial reuse
- C. RPR is connectionless
- D. RPR uses Ethernet Headers

Answer: B

---

**QUESTION 20**

Which is the correct definition of STP as applied to an Ethernet switch?

- A. Signal Transfer Point
- B. Simple Timing Protocol
- C. Spanning Tree Protocol
- D. Switch Transaction Protocol

Answer: C

---

**QUESTION 21**

What is the length of an IPv6 address?

- A. 32 bits
- B. 64 bits
- C. 128 bits
- D. 256 bits

Answer: C

---

**QUESTION 22**

Which operations on IP packets are NOT performed by NAT? (Choose two.)

- A. changing IPSec payload
- B. changing the transport protocol

- C. changing embedded IP addresses
- D. changing the destination IP address
- E. changing the destination Port Number

Answer: A,B

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**QUESTION 23**

Which ATM adaptation layer must use Constant Bit Rate (CBR)?

- A. AAL1
- B. AAL2
- C. AAL3/4
- D. AAL5

Answer: A

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**QUESTION 24**

Which is a characteristic of Data over GPRS cellular?

- A. ATM-based
- B. NOT switched
- C. circuit switched
- D. packet switched

Answer: D

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**QUESTION 25**

What is "Cable Labs"?

- A. a commercial corporation
- B. a government funded body
- C. an international standards body
- D. an industry consortium funded by the cable operators

Answer: D

---

**QUESTION 26**

What does Mobile IP (IP Mobility Support) refer to?

- A. Wireless LAN capability
- B. the ability to access IP from a cellular telephone
- C. the ability to roam seamlessly between cells on a cellular telephone
- D. the ability for a host to correctly send datagrams to a client when that client moves between different IP subnets

Answer: D



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**QUESTION 27**

Which is the correct description of the Dijkstra Algorithm?

- A. The algorithm calculates the shortest path between two points in a network.
- B. The algorithm builds an IP forwarding table based on destination addresses.
- C. The algorithm prioritizes paths between any two points in a network according to distance.
- D. The algorithm creates a (mathematical) graph of interconnections between network nodes.

Answer: A

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**QUESTION 28**

The convergence time for STP is within which range?

- A. 50-100 milliseconds
- B. 0.5-1 second
- C. 1-3 seconds
- D. 35-45 seconds

Answer: D

---

**QUESTION 29**

Which statement is true about checksums in a IPv6 header?

- A. It is carried in an extension header when it is needed.
- B. It has to be extended to cover the whole packet to improve the robustness of the protocol.
- C. All transport protocols for IPv6 have to carry a checksum which protects all the fields in the IPv6 header.
- D. It does NOT carry a checksum because the link and transport layer checksums provide adequate protection for the packet.

Answer: D

---

**QUESTION 30**

In a Digital Subscriber Line (DSL) network, which three functions are provided by the subscriber aggregation platform? (Choose three.)

- A. dynamic service selection via PPPoE
- B. routing of data packets
- C. Bayesian filtering for spam blocking
- D. termination of DSLAM data trunks
- E. voice services via GR-303

Answer: A,B,D

---

**QUESTION 31**

What type of network topology does RPR employ?

- A. Ring
- B. Mesh
- C. Linear
- D. Point-to-Point

Answer: A

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**QUESTION 32**

How many links can be shared using MLT?

- A. 2
- B. 4
- C. 8
- D. 16

Answer: C

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**QUESTION 33**

In a Multiprotocol Label Switching (MPLS) network, what is a "loose explicit route"?

- A. Only some of the hops are pre-defined.
- B. Every hop calculates the next hop to the LSP destination.
- C. All nodes of the Label Switch Path (LSP) route are pre-defined.
- D. The LSP does NOT have a backup path.

Answer: A

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**QUESTION 34**

What is the minimum Maximum Transmission Unit (MTU) allowed for an IPv6 link (i.e., what is the largest size packet that is guaranteed to be transmitted unfragmented across an IPv6 network)?

- A. 512 octets
- B. 1280 octets
- C. 1500 octets
- D. 8192 octets

Answer: B

---

**QUESTION 35**

How does a compression codec reduce the amount of data needed to store or transmit a digital signal?

- A. by chunking the signal into frames
- B. by encoding only the active speech and skipping any silence
- C. by removing redundant information from the digital representation
- D. by reducing the amount of data by least a factor of 10 compared to linear encoding

Answer: C

---

**QUESTION 36**

Other than PCM codecs, which are the most common type of codecs used for telecom voice?

- A. CELP codecs
- B. sub-band codecs
- C. wideband codecs
- D. variable bit-rate codecs

Answer: A

---

**QUESTION 37**

When is a compression method described as "lossy"?

- A. When there will be gaps in the decoded signal.
- B. When the method can NOT run fast enough to be used for real-time processes.
- C. When it is NOT possible to restore the original digital signal from the compressed signal.
- D. When there will be an obvious difference between the original and the compressed signal.

Answer: C

---

**QUESTION 38**

The largest gap in running speech that can be repaired by packet loss concealment is in which range?

- A. 6 - 8 ms
- B. 60 - 80 ms
- C. 600 - 800 ms
- D. 6 - 8 sec

Answer: B

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**QUESTION 39**

Where in the service development & deployment process should one begin to address QoE?

- A. at the verification stage, before the equipment is shipped to customers
- B. when defining design intent of the service offering, the network elements, and the complete solution
- C. once the network is up and running and the operational kinks are worked out, QoE can be optimized
- D. as the network is being deployed, to optimize provisioning and tuning for the types and proportions of traffic it will carry

Answer: B

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**QUESTION 40**

Which are the four main performance issues for voice Quality of Experience associated with Voice over IP?

- A. delay, codec quality, echo, muting
- B. delay, packet loss, codec quality, echo
- C. delay, echo, codec quality, call set-up time
- D. codec quality, packet loss, echo, low listening level

Answer: B

---

**QUESTION 41**

Assuming that the treatment for exceeding metering rates is to drop packets, which is the correct policing action for a single rate policer?

- A. Packets are passed up to EIR, all others are dropped.
- B. Packets are passed up to the CIR; all others are dropped.
- C. Packets are passed up to the Burst Rate, all others are dropped.
- D. Packets are always passed up to the CIR, and may be passed up to the EIR if bandwidth is available.

Answer: B

---

**QUESTION 42**

When designing a VoIP system, identify the parameters that are under the control of the equipment designer, the network designer, or the network manager. (Choose five.)

- A. codec selection
- B. packet size selection
- C. jitter buffer waiting time
- D. propagation delay over distance
- E. delay through legacy equipment

- F. use of packet loss concealment
- G. deployment of echo cancellers at each interface to TDM

Answer: A,B,C,F,G

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**QUESTION 43**

Which is the best definition of the function of a policer as it relates to a router?

- A. A policer applies policies to the admission of flows.
- B. A policer verifies the Class of Service marking of each packet.
- C. A policer meters packets and may re-mark them or drop them.
- D. A policer filters packets and marks them with a Class of Service.

Answer: C

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**QUESTION 44**

In a VoIP network, which will occur when increasing the amount of speech data in each packet?

- A. an increase in bandwidth efficiency while reducing jitter
- B. an increase in bandwidth efficiency at the expense of delay
- C. an increase in bandwidth efficiency at the expense of lost packets
- D. an increase in bandwidth efficiency without affecting other parameters

Answer: B

---

**QUESTION 45**

**DRAG DROP**

Drag the appropriate trunk signaling methods within the PSTN from LIST A to their associated attribute(s) in LIST B. Items in List A may be used more than once.

.

LIST A	LIST B
<div>MF</div>	<div>1</div> rob bits from the data stream to use as a signaling channel
<div>ISDN PRI</div>	<div>2</div> rob a full voice channel from a multiplexed data stream to act as a signaling channel
<div>SS7</div>	<div>3</div> rob bits full data channels from a multiplexed data stream to act as a signaling channel for another multiplexed data stream
	<div>4</div> use a separate signaling network to convey signaling information

Answer:

**LIST B**

- MF** rob bits from the data stream to use as aa signaling channel
- ISDN PRI** rob a full voice channel from a multiplexed data stream to act as a signaling channel
- ISDN PRI** rob bits full data channels from a multiplexed data stream to act as a signaling channel for another multiplexed data stream
- SS7** use a separate signaling network to convey signaling information

Explanation:

Rob bits from the data stream to use as a signaling channel

MF (Per Trunk Signaling) When trunk signaling is done on a per trunk basis, each trunk (that is,

64 kbps channel) donates some of its bits to provide a signaling channel.

This reduces the effective bandwidth of the trunk to 56 kbps.

Rob a full voice channel from a multiplexed data stream to act as a signaling channel

ISDN PRI :Another mechanism to convey signaling information

is to rob a complete channel from a DS1 or E1 for signaling purposes to allow the other channels to be delivered at full rate (that is, 64 kb/s). This scheme is implemented in the Primary Rate Interface1 (PRI) of ISDN (Integrated Services Digital Network).

Rob two full data channels from a multiplexed data stream to act as a signaling channel for another multiplexed data stream.

NOTE: This is a LINE QUESTION .. And the Original question was "appropriate trunk signaling methods " not LINES.

ISDN:PRI Note that if someone has an ISDN phone, it would not have PRI signaling. Instead, it would have BRI

signaling. A Basic Rate Interface (BRI) is two 64 kbps bearer channels and one 16 kbps D channel.

There are D Channel handlers for line side peripherals as well that permit signaling information to be relayed to the call control functions of the switch.

Use a separate signaling network to convey signaling information

SS7:Signaling System 7 is the closest thing that there is to a universal signaling system between telephone switches. Entire countries often use the same variant, usually some flavor of the ANSI or ETSI standards. SS7 signaling relies on an entirely separate signaling network, very closely monitored, to send signaling information between switches.

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**QUESTION 46**

DRAG DROP

User A wants to call User B. Both users are served by the same voice switch. Place the sequence of events from LIST A to LIST B for a call setup in the correct order. NOT all items are used. Click the Task Button to view the lists.

**LIST A**

- A Goes Off Hook
- A Goes Off Hook
- Dial Tone is provided
- Phone Registration
- Trunk Selection
- SS7 Signaling
- Ringback ACK from phone
- Dial Digits
- Ringback Tone applied to User A's phone
- Ringback Tone applied to User B's phone
- Ringing applied to User B's phone
- User B answers
- Conversation proceeds

**LIST B**

- 1
- 2
- 3
- 4
- 5
- 6
- 7

Answer:

- A Goes Off Hook
- Dial Tone is provided
- Dial Digits
- Ringback Tone applied to User A's phone
- Ringback Tone applied to User B's phone
- User B answers
- Conversation proceeds

Explanation:

First if both phones are on the same switch then a given is NO SS7 or Trunking is taking place.

So these can be removed from selection:

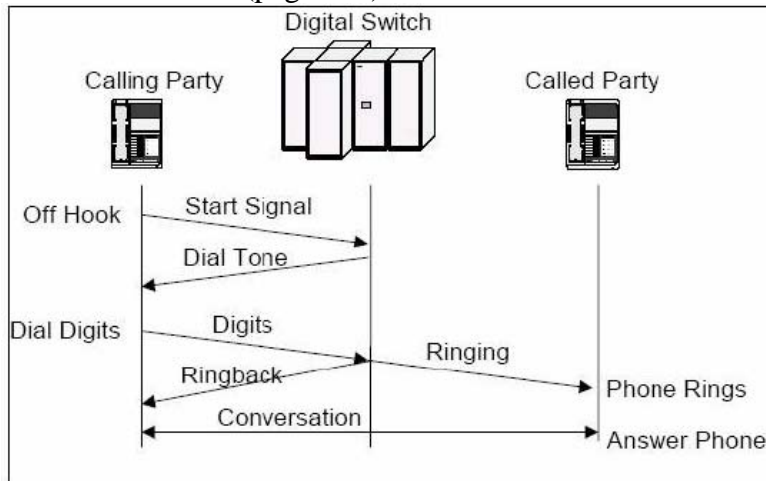
Trunk Selection

SS7 Signaling

Ringback ACK from phone

Correct 7 answers in order:

Per the RTN book (page 128):



### QUESTION 47

Which MPEG frame type contains information to re-create a complete picture?

- A. Predictive frame
- B. Bi directional frame
- C. Vid frame (V Frame)
- D. Intra frame (I Frame)

Answer: D

### QUESTION 48

In the PSTN, call routing decisions are made by which network components?

- A. Routers
- B. Switches
- C. Signal Transfer Points
- D. Service Control Points

Answer: B

### QUESTION 49

Which network characteristics are considered "Best Effort"? (Choose three.)

- A. expedited forwarding
- B. all sessions admitted
- C. scheduling & policing
- D. call admission control
- E. traffic service classes
- F. first-come, first-served
- G. no resource guarantee



Answer: B,F,G

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**QUESTION 50**

The Discrete Cosine Function (DCT) in an MPEG encoder, translates blocks of which number of pixels?

- A. 2x2
- B. 8x8
- C. 16x16
- D. 64x64

Answer: B

---

**QUESTION 51**

Which optical network architecture attribute in a SONET/SDH network comprises dedicated bandwidth around a ring?

- A. Linear
- B. Terminal
- C. Bidirectional Line-Switched Ring (BLSR)
- D. Unidirectional Path-Switched Ring (UPSR)

Answer: D

---

**QUESTION 52**

Which is the most accurate American National Standards Institute (ANSI) synchronization standard?

- A. Stratum 4 signal
- B. SMC signal
- C. Stratum 1 signal
- D. SSM signal

Answer: C

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**QUESTION 53**

Which application uses fixed-sized packets?

- A. VoIP
- B. Email
- C. Telnet
- D. Streaming Audio
- E. Video Conferencing

Answer: A

---

**QUESTION 54**

What must Real Time Networking provide?

- A. the ability to run any service or application a user wants
- B. the capacity to provide connectivity to all potential users
- C. the capacity to provide service to all user in all situations
- D. the illusion that there is no network between the endpoints

Answer: D

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**QUESTION 55**

What is the difference between a single rate and a dual rate policer?

- A. a single rate policer meters on EIR, a dual rate policer meters on EIR and CIR
- B. a single rate policer meters on CIR, a dual rate policer meters on CIR and EIR.
- C. a single rate policer meters on DSCP, a dual rate policer meters on DSCP and Drop Precedence
- D. a single rate policer meters on Drop Precedence, a dual rate policer meters on Drop Precedence and DSCP

Answer: B

---

**QUESTION 56**

In a properly tuned converged network, the various technologies and protocols \_\_\_\_\_.

- A. are kept separated so they cannot interact.
- B. operate side-by-side without affecting each other.
- C. can interact and should not be treated in isolation.
- D. are reduced to a minimum set to prevent interaction between them.

Answer: C

---

**QUESTION 57**

A VoIP network using G.711 with 20 ms packets has been deployed, meeting voice QoE requirements. When the network is connected to a digital wireless network, which impairment must be managed?

- A. packet loss
- B. network echo
- C. increased delay
- D. clipping of words or syllables

Answer: C

---

**QUESTION 58**

Which statements about QoE are true? (Choose three.)

- A. QoE directly affects the bottom line for Service Providers.
- B. QoE and Quality of Service (QoS) are essentially the same thing.
- C. QoE is a nice-to-have, but is not an essential contributor to the value of a service.
- D. Occasionally QoE factors have opposing influences, and a trade-off must be made between these factors.
- E. QoE is a subjective quantity, and behavioral science techniques are required to make a direct measurement.
- F. Once a QoE parameter is identified, the target value determined for that parameter will be the same for all Real Time services and applications.

Answer: A,D,E

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**QUESTION 59**

DRAG DROP

Drag the codecs in List A to List B by order of distortion with the first being the lowest distortion.

LIST A	LIST B
<div>G.729/G.729A</div>	<div>place here</div> <b>Lowest Distortion</b>
<div>G.723.1</div>	<div>place here</div>
<div>G.711-64</div>	<div>place here</div>
<div>G.726-32</div>	<div>place here</div> <b>Highest Distortion</b>

Answer:

LIST B
<div>G.729/G.729A</div> <b>Lowest Distortion</b>
<div>G.723.1</div>
<div>G.711-64</div>
<div>G.726-32</div> <b>Highest Distortion</b>

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**QUESTION 60**

In video, which is the effect from "blocking"?

- A. toothcombing caused by interlacing
- B. insufficient resolution of information into pixels
- C. lack of smooth information due to frame rate conversion
- D. blocks of pixels appearing in the wrong location in the image

Answer: D

---

**QUESTION 61**

If you are told that a router supports TOS fields, which is true?

- A. There are 16 Types of Service defined.
- B. There are 8 IP Precedence levels defined.
- C. There is an Expedited Forwarding class defined.
- D. There are 16 Assured Forwarding classes defined.

Answer: B

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**QUESTION 62**

Which is the approximate frequency of a NTSC video sub carrier?

- A. 3.58 MHz
- B. 4.43 MHz
- C. 5.5 MHz
- D. 8 MHz

Answer: A

---

**QUESTION 63**

What is the main purpose of admission control?

- A. traffic policing
- B. facilitates buffer management
- C. reduces VoIP packet overhead
- D. ensures sufficient resources are available before admitting new traffic

Answer: D

---

**QUESTION 64**

Which factor affects the perceptibility of echo in a voice network?

- A. packet loss
- B. choice of CODEC
- C. Long Return from Procedure (RETL)
- D. Talker Echo Loudness Rating (TELR)

Answer: D

---

**QUESTION 65**

What type of QoS mechanisms is capable of delivering hard QoE?

- A. nodal
- B. DiffServ
- C. distributed
- D. end-to-end centralized
- E. traffic policing and shaping

Answer: D

---

**QUESTION 66**

In a real time network, to what does QoS Mapping refer?

- A. provisioning of QoS features at each node during network deployment
- B. correspondence of QoS settings between one network technology and another
- C. determining what QoS settings are in use at each node in an in-service network
- D. enabling QoS mechanisms for a particular flow along a path through the network

Answer: B

---

**QUESTION 67**

Which applications and services are classified as Non-Real-Time (NRT)? (Choose three).

- A. File Transfer
- B. Video Conferencing
- C. Short Message Service (SMS)
- D. Cellular Phone Service
- E. Security Monitoring
- F. Remote Operation of Word Processor
- G. Voice Mail

Answer: A,C,G

---

**QUESTION 68**

A Traffic Trunk is a term used to describe a collection of flows within which element of the network?

- A. LSP
- B. FEC
- C. PER
- D. CER

Answer: A

---

**QUESTION 69**

Real-Time (RT) and non-Real-Time services and applications have different packet traffic characteristics between the two ends of a connection. Which characteristics are more likely to be from a RT process? (Choose three).

- A. Long duration flows
- B. The flows in each direction alternate.
- C. Flows consisting of short bursts of packets.
- D. Packets flow in both directions simultaneously.
- E. Flows consisting of small packets that are generated at regular intervals.
- F. The number of packets moving in one direction is much higher than the number of packets moving in the opposite direction.

Answer: A,D,E

---

**QUESTION 70**

Which are the service classes available in ATM? (Choose three.)

- A. ABR
- B. CLR
- C. MBS
- D. CBR
- E. AAL5
- F. CBVT
- G. RT-VBR

Answer: A,D,G

---

**QUESTION 71**

In a Real Time Network, what is a Media Gateway?

- A. a device that controls admission to the network
- B. a device that coordinates traffic control signaling
- C. a node that concentrates traffic into the network core
- D. a device that converts data from the format required for one type of network to the format required for another

Answer: D

---

**QUESTION 72**

Which is a true statement about MPLS mechanisms?

- A. Routing decisions are made at the Label Edge Router (LER) based in part on a label.
- B. Switching decisions are made at the Label Edge Router (LER) based in part on a label.
- C. Routing decisions are made at the Label Switching Router (LSR) based in part on a label.
- D. Switching decisions are made at the Label Switching Router (LSR) based in part on a label.

Answer: D

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**QUESTION 73**

Which is an objective metric that takes into account all the factors contributing to voice performance?

- A. R
- B. MOS
- C. PESQ
- D. TELR

Answer: A

---

**QUESTION 74**

Which of the following items is related to cable based IP networks?

- A. AAL5
- B. ADSL
- C. DOCSIS
- D. IEEE 802.16

Answer: C

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**QUESTION 75**

What is the definition for the acronym ISUP?

- A. ISDN User Part
- B. Intelligent Signaling User Protocol
- C. Integrated Services User Protocol
- D. Intelligent Switching User protocol
- E. Integrated Switching User Protocol

Answer: A

---

**QUESTION 76**

The ordered and sequenced delivery of real time media is performed by which protocol?

- A. TCP
- B. RTP
- C. H.323
- D. RTSP

Answer: B

---

**QUESTION 77**

Which item provides re-route capability on an ATM network?

- A. PNNI
- B. RSTP
- C. OSPF
- D. ECMP

Answer: A

---

**QUESTION 78**

In the context of network engineering, why would a Hypothetical Reference Connection (HRX) be created? (Choose two.)

- A. To display packet loss rate requirements.
- B. To display router forwarding speed capabilities.
- C. To facilitate the identification of end-to-end performance.
- D. To facilitate the identification of the weakest connection path/link.

Answer: C,D

---

**QUESTION 79**

What are two key attributes of the Quality of Experience (QoE) engineering process? (Choose two.)

- A. a bottom-up approach
- B. a top-down approach
- C. define user QoE targets prior to the choice of QoS mechanisms
- D. select choice of QoS mechanisms prior defining user QoE targets

Answer: B,C

---

**QUESTION 80**

If Network Address Translation (NAT) is deployed in the network, what considerations must the network engineer make?

- A. NAT introduces jitter
- B. NAT introduces echo
- C. NAT introduces significant delay
- D. NAT may not work with some codecs
- E. NAT may not work with some Peer-to-Peer protocols

Answer: E

---

**QUESTION 81**

Which ATM adaptation layer is used to carry IP packets?

- A. AAL1
- B. AAL2



- C. AAL3/4
- D. AAL5

Answer: D

---

**QUESTION 82**

In a Multiprotocol Label Switching (MPLS) network, what is the main function of a Label Distribution Protocol (LDP)?

- A. To fill routing tables.
- B. To create local backup paths.
- C. To establish the Label Switched Paths (LSPs).
- D. To switch MPLS packets on Label Switch Routers (LSRs).

Answer: C

---

**QUESTION 83**

If STP is enabled on an Ethernet switch and there are multiple Ethernet connections between it and another Ethernet switch (also with STP enabled), which is true for traffic between those switches?

- A. Traffic is load-balanced between the two links.
- B. Traffic is shared across the two links based on user defined filters.
- C. Traffic is carried over one of the Ethernet links, the other will be blocked.
- D. Traffic is shared across the links on a source/address destination pair basis.

Answer: C

---

**QUESTION 84**

In a Multiprotocol Label Switching (MPLS) network, what are the two Label Distribution Protocols (LDPs)?

- A. OSPF-TE and IS-IS-TE
- B. RSVP-TE and CR-LDP
- C. RSVP-TE and OSPF-TE
- D. CR-LDP and IS-IS

Answer: B

---

**QUESTION 85**

To which element does the acronym "ADM" refer?

- A. Add drop multiplexer
- B. Adaptive Data Matrix
- C. Advanced digital multiplexer
- D. Administrative Management Domain

Answer: A

---

**QUESTION 86**

The FRF.12 specification is associated with which aspect of real-time networking?

- A. Frame Relay QoS
- B. Frame Relay Voice
- C. Frame Fragmentation
- D. Frame Relay Service Category

Answer: C

---

**QUESTION 87**

Assume the length of an IPv6 packet exceeds the Maximum Transmission Unit (MTU) of a link on the path between source and destination. How will this packet be transmitted from the source host to the destination host?

- A. The packet CANNOT be transmitted.
- B. The packet will be divided into a number of shorter fragments by the source host and reconstituted from the fragments at the destination host.
- C. The packet will be divided into a number of shorter fragments at the ingress router for any link for which the packet is too long and reconstituted from the fragments at the destination host.
- D. The packet will be divided into a number of shorter fragments at the ingress router for any link for which the packet is too long and reconstituted from the fragments by the router at the end of the link.

Answer: B

---

**QUESTION 88**

**DRAG DROP**

Drag the definitions of TDM related items in List A to the corresponding TDM item in List B. It is possible to use items in List A multiple times or not at all.

LIST A	LIST B
a signaling protocol	place here Erlang
a type of codec	place here G.711
a measure of call volume	place here ISDN
a SONET interface data rate	place here OC3
an addressing protocol	place here Q.931
a Hello Protocol	place here SS7

Answer:

**LIST A**

**LIST B**

a signaling protocol

Erlang

a type of codec

G.711

a measure of call volume

ISDN

a SONET interface data rate

OC3

an addressing protocol

Q.931

a Hello Protocol

SS7

---

**QUESTION 89**

What does the DOCSIS (a group of standards) define?

- A. data over cable
- B. voice over cable
- C. video over cable
- D. analog video over cable

Answer: A

---

**QUESTION 90**

What is the relationship between QoE and QoS?

- A. QoS affects QoE.
- B. QoS and QoE are synonymous.
- C. Both are driven by RoE measurements.
- D. QoE provides mechanisms for achieving QoS.

Answer: A

---

**QUESTION 91**

What is the difference between Ethernet over Fiber and RPR?

- A. RPR is faster.
- B. There is no difference.
- C. Ethernet over Fiber is faster
- D. Ethernet over Fiber is deployed as Point-to-Point - RPR is deployed on a Ring.
- E. Ethernet over Fiber is deployed on a Ring - RPR is deployed as Point-to-Point.

Answer: D

---

**QUESTION 92**

What is a communication device that provides an optical transport network function

called?

- A. Multiplexer
- B. Path Overhead
- C. SONET Overhead
- D. SONET Network Element

Answer: D

---

**QUESTION 93**

What is the main performance constraint of Wireless LAN versus public cellular networks?

- A. jitter
- B. range
- C. routing
- D. throughput

Answer: B

---

**QUESTION 94**

Which is a characteristic of Cellular voice traffic on a 2G system (GSM or CDMA)?

- A. ATM-based
- B. NOT switched
- C. circuit switched
- D. packet switched

Answer: C

---

**QUESTION 95**

Which is a true statement about MPLS mechanisms?

- A. Routing decisions are made at the LER based on source and destination IP addresses.
- B. Routing decisions are made at the LSR based on source and destination IP addresses.
- C. Switching decisions are made at the LSR based on source and destination IP addresses
- D. Switching decisions are made at the LER based on source and destination IP addresses.

Answer: A

---

**QUESTION 96**

Which equipment converts multi-media information, such as voice, into suitable IP traffic?

- A. VT

- B. MTA
- C. PBX
- D. Optical Hub

Answer: B

---

**QUESTION 97**

If Split MLT is used in a network of Ethernet switches instead of Distributed MLT, which feature will become available?

- A. Dual Homing
- B. Forwarding in hardware
- C. Load sharing across links
- D. Sub-second fail-over times

Answer: A

---

**QUESTION 98**

The setup of the real time session as well as any requests for media and codec parameters are negotiated and provided by which protocol?

- A. NTP
- B. RTP
- C. RTCP
- D. Signaling protocols

Answer: D

---

**QUESTION 99**

How are packets forwarded once they reach the Egress Label Edge Router (LER) in a Multiprotocol Label Switching (MPLS) network?

- A. They are forwarded based on their IP address.
- B. They are not forwarded. They terminate at the Egress LER.
- C. They are forwarded based on the LSP type: L-LSP or E-LSP.
- D. They are forwarded based on the Label Switch Path (LSP) label.

Answer: A

---

**QUESTION 100**

The Asymmetric Digital Subscriber Line (ADSL) broadband technology uses which underlying Layer 2 protocol to transport data across the network?

- A. X.25
- B. Ethernet/IEEE 802.3
- C. Asynchronous Transfer Mode (ATM)

D. Integrated Services Digital Network (ISDN)

Answer: C

---

**QUESTION 101**

How does RPR use both sides of the SONET Ring?

- A. through VT mapping
- B. through auto-discover
- C. by using concatenated STSs
- D. through disabling of Layer 1 SONET protection

Answer: D

---

**QUESTION 102**

An RTP packet provides a sequencing number in its header. The field is used for which purpose?

- A. retransmission
- B. decuring payload
- C. acknowledgement
- D. detecting missing packets

Answer: D

---

**QUESTION 103**

Which are Media Gateway Control Protocols? (Choose three.)

- A. H.225
- B. H.248
- C. H.323
- D. MEGACO
- E. NCS/J.162

Answer: B,D,E

---

**QUESTION 104**

Which mechanism is used by the Session Initiation Protocol (SIP) for Telephony (SIP-T) to provide interoperability between SS7 Public Switched Telephone Network (PSTN) Gateways?

- A. Use SIP to set up a separate ISUP signaling channel.
- B. Use the INFO method instead of INVITE to set up PSTN calls.
- C. Set up sessions using SIP, but carrying ISDN User Part (ISUP) messages in SIP messages in a MIME body.
- D. Set up sessions using SIP with Q Interface Signaling (QSIG) or ISUP carried in a

Session Description Protocol (SDP).

Answer: C

---

**QUESTION 105**

What must Real Time Networking provide?

- A. the ability to run any service or application a user wants
- B. the capacity to provide connectivity to all potential users
- C. the capacity to provide service to all user in all situations
- D. the illusion that there is no network between the endpoints

Answer: D

---

**QUESTION 106**

Which pair of elements does NOT represent a valid comparison between H.323 and SIP?

- A. SETUP and INVITE
- B. Endpoint and User Agent
- C. Admission Request and REFER
- D. Gatekeeper routed model and Proxy Server

Answer: C

---

**QUESTION 107**

RTCP is the control protocol that works in conjunction with RTP. What is the main purpose of the protocol?

- A. supports VCR-like commands for RTP
- B. supports a transparent tunnel for security
- C. provides a reliable communication mechanism
- D. provides measurements and statistics feedback information

Answer: D

---

**QUESTION 108**

Which describes and differentiates H.248 and SIP protocols?

- A. H.248 is a QoS protocol and SIP is a call control Protocol.
- B. H.248 is a Master-Slave protocol and SIP is a Peer-to Peer protocol.
- C. H.248 is a Peer-to-Peer protocol and SIP is a Master-Slave protocol.
- D. H.248 is a Real-Time packetization protocol and SIP is a Call Control Protocol.

Answer: B

---

**QUESTION 109**

A VoIP solution has been deployed and the network is tuned to deliver good voice quality for calls within the network. When the VoIP network is connected to a TDM wireline network, which impairment must be managed?

- A. packet loss
- B. network echo
- C. increased delay
- D. clipping of speech sound

Answer: B

---

**QUESTION 110**

Which encoding system is used extensively by H.245 and H.225.0?

- A. XML
- B. MIME
- C. ASN.1/PER
- D. Plain Text (i.e., ASCII)

Answer: C

---

**QUESTION 111**

Which method is used for call transfers and redirection to a conference bridge when the Session Initiation Protocol (SIP) is used?

- A. PRACK
- B. UPDATE
- C. REFER
- D. NOTIFY

Answer: C

---

**QUESTION 112**

What data rate is considered adequate to send a standard rate video signal with MPEG2 compression?

- A. 3.5 MBps
- B. 4.33 Mbps
- C. 5.0 MBps
- D. 10 MBps

Answer: A

---

**QUESTION 113**

The largest gap in running speech that can be repaired by packet loss concealment is in



which range?

- A. 6 - 8 ms
- B. 60 - 80 ms
- C. 600 - 800 ms
- D. 6 - 8 sec

Answer: B

---

**QUESTION 114**

Which SONET/SDH network configuration has the attribute of being able to reuse the traffic timeslots around the network?

- A. an optical terminal device with in a linear topology
- B. an optical wideband digital cross-connect in a 1 for N configuration
- C. an optical Add-Drop Multiplexer network within a Unidirectional Path-Switched Ring (UPSR)
- D. a broadband digital cross-connect using a Bidirectional Line-Switched Ring (BLSR) configuration

Answer: D

---

**QUESTION 115**

Which is NOT a QoE parameter?

- A. price
- B. service availability
- C. ease of completing a task
- D. clarity/fidelity of the received signal

Answer: A

---

**QUESTION 116**

In an SS7 network, switches are addressed using which identifier?

- A. Point Codes
- B. Switch ID Codes
- C. Signaling Link Codes
- D. Area Codes and Exchange Codes

Answer: A

---

**QUESTION 117**

In a TDM network, how many samples of a voice signal are required per second to create a DS0?

- A. 4,000
- B. 8,000
- C. 16,000
- D. 32,000

Answer: B

---

**QUESTION 118**

If you are told that a router implements tail drop, which is true?

- A. Packets arriving are dropped if the queue is full.
- B. Packets arriving are dropped if the queue is close to being full.
- C. Packets arriving cause packets at the other end of the queue (its tail) to drop.
- D. Packets arriving are dropped if the drop precedence is lower than any in the queue.

Answer: A

---

**QUESTION 119**

Select the best router behaviors for Expedited Forwarding (EF) Class traffic.

- A. priority scheduler, tail drop queue, single rate policer
- B. weighted scheduler, tail drop queue, single rate policer
- C. priority scheduler, active queue management, dual rate policer
- D. weighted scheduler, active queue management, dual rate policer

Answer: A

---

**QUESTION 120**

DRAG DROP

Place the items in LIST A in ascending order by the maximum number of DS0s they contain by dragging them to LIST B.

LIST A	LIST B
E1	place here <b>Fewest DS0s</b>
T1	place here
STM-1	place here
OC-12	place here
DS3	place here <b>Most DS0s</b>

Answer:

**LIST B**



---

**QUESTION 121**

Which is NOT a consideration in setting up Silence Suppression?

- A. the end-to-end delay
- B. the capacity of the link
- C. the maximum number of calls the link will carry
- D. the tolerance for momentary congestion and packet loss
- E. the expected average reduction in data volume for given VAD settings

Answer: A

---

**QUESTION 122**

In a broadcast TV video signal, how many interlaced fields constitute a frame?

- A. 1
- B. 2
- C. 4
- D. 8

Answer: B

---

**QUESTION 123**

A traditional SONET network is mainly comprised of which optical configurations?

- A. Linear, UPSR, and BLSR
- B. Linear, Hub, and Meshed BLSR
- C. Bidirectional Line-Switched Ring (BLSR), UPSR, and Hub
- D. Unidirectional Path-Switched Ring (UPSR), Meshed, and Hub

Answer: A

---

**QUESTION 124**

Which value can be derived from how often a digital value is created from the instantaneous amplitude of an analog signal?

- A. the frame rate
- B. the look-ahead
- C. the sampling rate
- D. the compression ratio

Answer: C

---

**QUESTION 125**

What should performance targets based on QoE be expressed in terms of?

- A. subjective Mean Opinion Score (MOS)
- B. P.862 (PESQ) or a similar objective MOS estimator
- C. user complaint rates and frequency of abandoned sessions
- D. objectively measurable characteristics whose relationship to QoE is well-understood

Answer: D

---

**QUESTION 126**

What percentage of a voice telephone signal can be removed by a Silence Suppression algorithm without risking significant audible artifacts to the speech?

- A. 10-5%
- B. 20-5%
- C. 30-5%
- D. 50-5%

Answer: C

---

**QUESTION 127**

Which is defined by IEEE 802.1Q?

- A. an IP field including the DiffServ Code Point
- B. an Ethernet field providing a Packet Priority Designation
- C. an IP field including Type of Service and Drop Precedence bits
- D. an Ethernet tag consisting of 4 fields including a protocol identifier field, a priority field and a VLAN ID field

Answer: D

---

**QUESTION 128**

How many classes of service are available through the Ethernet User Priority bits?

- A. 8
- B. 12
- C. 16

D. 32

Answer: A

---

**QUESTION 129**

A standard voice telephone call is said to be full-duplex. What does this mean?

- A. The voice channel is low delay and free of echo.
- B. The voice channel provides equivalent quality for each direction.
- C. The voice channel is able to transmit the full range of speech frequencies.
- D. The two paths making up the channel each take the most direct path between the two endpoints.
- E. The voice channel consists of two independent paths that operate simultaneously, one for each direction.

Answer: E

---

**QUESTION 130**

Which is a function of a scheduler in a router?

- A. A scheduler determines how traffic is metered at different times of the day.
- B. A scheduler buffers packets and sends them out in a metered fashion to smooth out bursty traffic.
- C. A scheduler determines how queued packets are handled as the number of packets in a queue increases.
- D. A scheduler decides which queue is used for a packet and how often the queue is serviced to send packets.

Answer: D