



King Saud University
College of Computer and Information Sciences
Computer Engineering Department

Boadband and High Speed Networks (CEN 449)

Midterm Exam 2015

Section Number:

Student Name: Student Number:

Allowed Time: 2 Hours

Date: (1/1/1437) (14/10/2015)

Question	Grades	
1	2.5	
2	2.5	
3	3	
4	2	
5	5	
6	2.5	
7	2.5	
Total		

Question One - Choose True or False statement :

1. **Narrowband** Refers to technologies that offer high data rates (False)
 2. **Wide Area Networks (WAN)** that optimized for a larger geographic area than a LAN, ranging from several blocks of buildings to entire cities. (False)
 3. The **Access Point** establishes an infrastructure mode for networking between all wireless clients and Ethernet resources. (True)
 4. **Security** means the time it takes a link to recover from failure. (False)
 5. **Rate of transmission** is the amount of time it takes for the head of the signal to travel from the sender to the receiver. It can be computed as link length (s) / propagation speed (v) over the specific medium. (False)
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Question Two - Choose the correct answer a, b, c, d :**(2.5 Grades)**

1. The maximum data rate for dialup telephone connection lines is 56 Kbps and classified as technology.
(a) **Narrowband** (b) Broadband (c) Multicast
2. Uses the same line as a phone but allows calls to be made at the same time
(a) ATM (b) Wireless Network (c) **DSL**
3. It supports multimedia applications such as: Video Telephony and Video Conferencing.
(a) (MAN) (b) (LAN) (c) (**WAN**)
4., a circuit-switched telephone network system, which also provides access to packet switched networks, designed to allow digital transmission of voice and data over ordinary telephone copper wires, It offers circuit-switched connections (for either voice or data), and packet-switched connections (for data).
(a) **ISDN** (b) PSDN (c) FDDI
5.Low set-up cost as no wiring required.
(a) **Wireless Broadband** (b) DSL (c) Dialup connection

Question Three - Choose True or False statement :

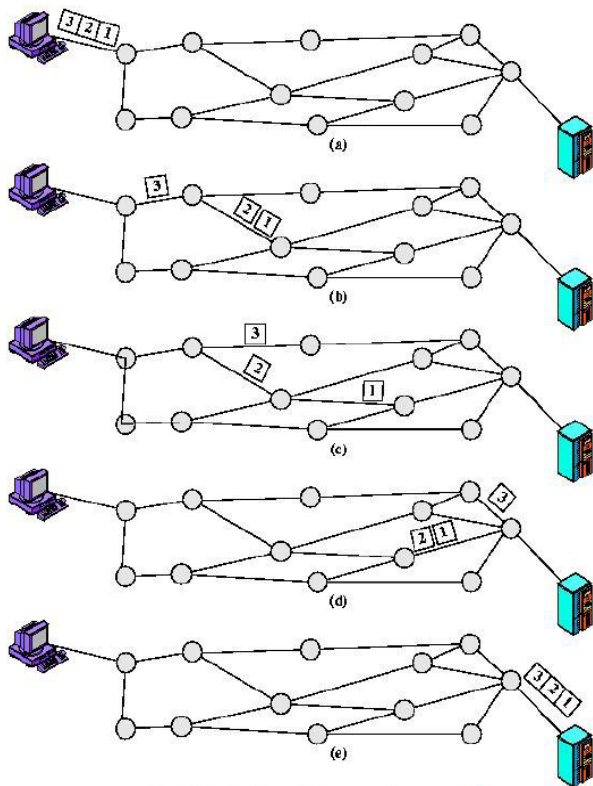
1. Broadband Technologies refer to technologies that offer high data rates, one example of broadband access technologies is **Leased Circuits** using modems. (False)
2. Frame relay and ATM are variants of **Message Switching**. (False)
3. **Output contention** occurs when two incoming cells that are destined to different output ports require the same internal link in the switch (False)

Question Four- Choose the correct answers :

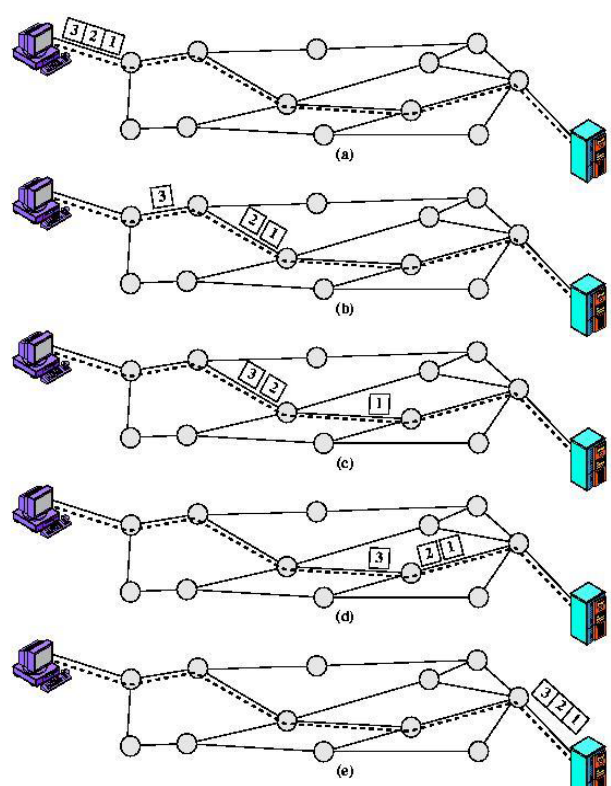
(2 Grades)

1. is a technique by which the total bandwidth available in a communication medium is divided into a series of non-overlapping frequency sub-bands.
(a) **FDM** (b) TDM (c) TST
2. In switching, a dedicated line is set up before transmission and is occupied by the user who made that call until the service is terminated.
(a) **Circuit** (b) Message (c) Packet

Question Five- The packet (1), (2), and (3) transferred from sender to receiver, please represent using dotted lines both of datagram and virtual circuit approaches. (4 Grades)



Packet Switching: Datagram Approach



Packet Switching: Virtual-Circuit Approach

Topic 3 -Network control / Management protocol in High Speed Networks (2.5 Grades)

Question Six - Choose True or False statement :

1. When two stations (or nodes) using a shared communication, **LLC Sublayer** determines which is allowed to access the media at any one time. (False)
 2. In adaptive control, the routing path should be determined as the message is routed through the network. (True)
 3. Congestion causes by temporary overload in system. (True)
 4. In virtual-path routing, the basic principle is to group a bundle of connections with the same source and destination (True)
 5. The objectives of flow control/congestion control is to prevent deadlocks. (True)
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Question Seven - Choose the correct answer : (2.5 Grades)

1. The Providing node-to-node flow and error control
(a) Physical layer (b) MAC Sublayer (c) **LLC Sublayer**
2. In CSMA, The channel is sensed idle while it is actually busy due to.....
(a) Transmission delay. (b) **Propagation delay.** (c) Collision.
3. In the route is decided individually.
(a) centralized control (b) deterministic control (c) **distributed control**
4. Flow control/congestion control takes place in To control the flow between two neighboring nodes in the network.
(a) **Data Link Layer** (b) Network Layer (c) Transport Layer
5. protocols are designed for packet recovery due to packet errors or loss
(a) Traffic Policy (b) **Error Control** (c) Congestion Control



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Broadband and High Speed Networks (CEN 449)

Section Number: 56564

Student Name: **Student Number:**

Allowed Time: 2 Hours

Date: (18/2/1437) (30/11/2015)

Question	Grades	
1	2.5	
2	2.5	
3	3	
4	2	
5	5	
6	2.5	
7	2.5	
Total	20	

Topic 4 - Carriers

Question 1- Choose True or False statement :

(2.5 Grades)

1. Pulse Code Modulation (PCM) is a method used to convert digital represented sample to analog sample . (False)
 2. TDM is a digital process that can be applied when the data rate capacity of the transmission medium is greater than the data rate required by the sending and receiving device. (True)
 3. In TDM, the data rate of the link is n times faster, and the unit duration is n times shorter. (True)
 4. Synchronous digital multiplexer have channels with the same clock frequency (True)
 5. E1 carrier has (30) channels used for information and (1) channels used for signaling. (False)
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Question 2 - Choose the correct answer :

(2.5 Grades)

1. The is the process that a single data bit or byte from an I/O port is released to the input of Multiplexer or output of multiplexer by a clock pulse.
(a) Interleaving (b) Multiplexing (c) Modulation
2. The T1 carrier consists of voice channels multiplexed together.
(a) 32 (b) 24 (c) 16
3. In T1 Carrier each channel contains PCM code and is sampled 8000 times/sec.
(a) eight-bit (b) one-bit (c) two-bit
4. The E1 carrier include channels used for signaling.
(a) Two (b) one (c) Four
5. The T1 carrier frame contains added to each fram to maintain frame and sample synchronization between TDM transmitter and receiver.
(a) One framing byte (b) Two framing bits (c) one framing bit

Topic 5 - SONET/SDH

Question 3 - Choose True or False statement :

(3 Grades)

1. The SONET and SDH was developed to replace the SDH system for transporting large amounts of telephone calls and data traffic over the same fiber without synchronization problems. (False)
2. . For both SONET and SDH, this is often represented by displaying the frame graphically: as a block of 90 columns and nine rows for STS-1, and 270 columns and Three rows for STS-3.(False)
3. In SONET layers, The path layer Converts to optical signals and back to electromagnetic (True)

Question 4- Choose the correct answers :

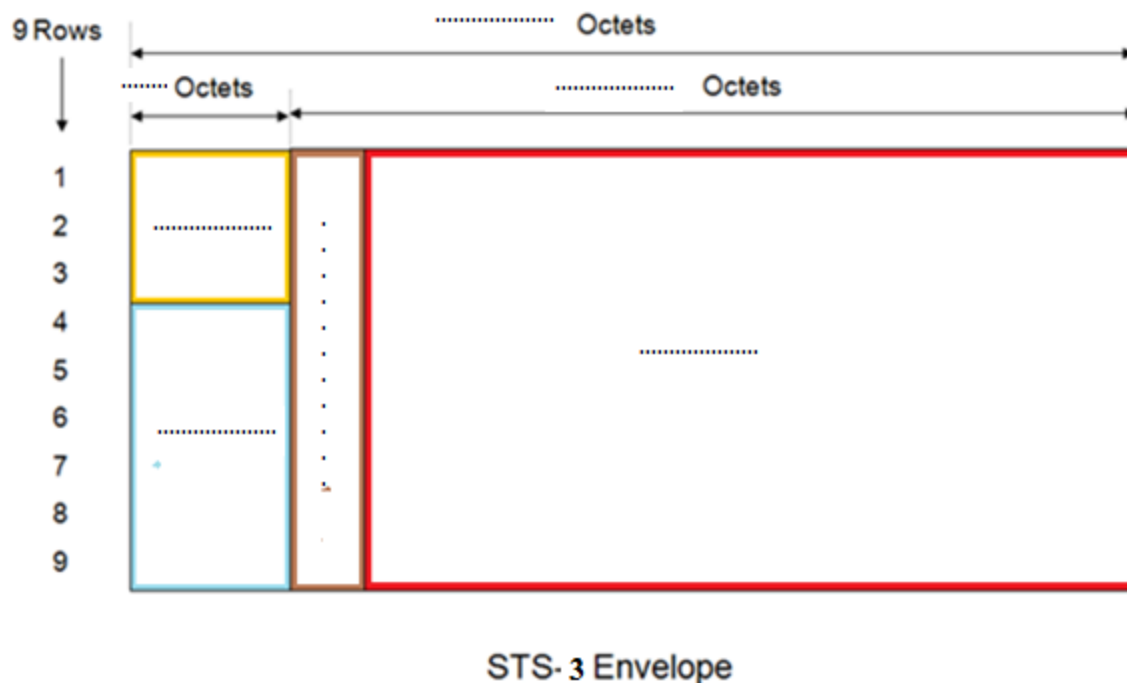
(2 Grades)

1. Three STS-1 signals can be multiplexed together to create STS-3 signal (.....) which represent the electrical signal of OC-3.
(a) 155.52 Mbps (b) 51.84 Mbps (c) 622.08 Mbps
2. refers to a collection of performance parameters whose values have to do with the speed and accuracy/reliability of ATM connection.
(a) QoS (b) Private UNI (c) Public NNI

Question 5 - Fill the name of each overhead parts and the number of octets for the all

STS -3 Envelope structure.

(5 Grades)



Topic 6 - Asynchronous Transfer Mode (ATM)

Q6- Choose the correct answers :

(2.5 Grades)

1. The ATM Layer converts application data into ATM data units in order to provide support for user applications.
(a) Physical Layer (b) ATM Layer (c) AAL Layer
2. The ATM Layer is responsible for the simultaneous sharing of virtual circuits over a physical link (*cell multiplexing*)
(a) Physical Layer (b) ATM Layer (c) AAL Layer
3. When a virtual circuit is established, both *the transport layer in the host machine and the network* must agree on a defining the service.
(a) Traffic contract (b) Traffic shaping (c) Traffic policing
4. the number of cells/sec that are delivered to the wrong destination because of an undetected error in the header.
(a) Cell Miss-insertion Rate (CMR) (b) Cell Loss Ratio (c) Cell Error Ratio (CER)
5. The is split into *A segmentation and Reassembly sublayer (SAR)* and a convergence sublayer
(a) Physical Layer (b) ATM Layer (c) AAL Layer

Q7 - Fill name of layers, sub-layers and planes for the ATM Reference Model (2.5 Grades)

