King Saud University

College of Computer and Information Sciences

Computer Engineering Department

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)

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)

STS- 3 Envelope
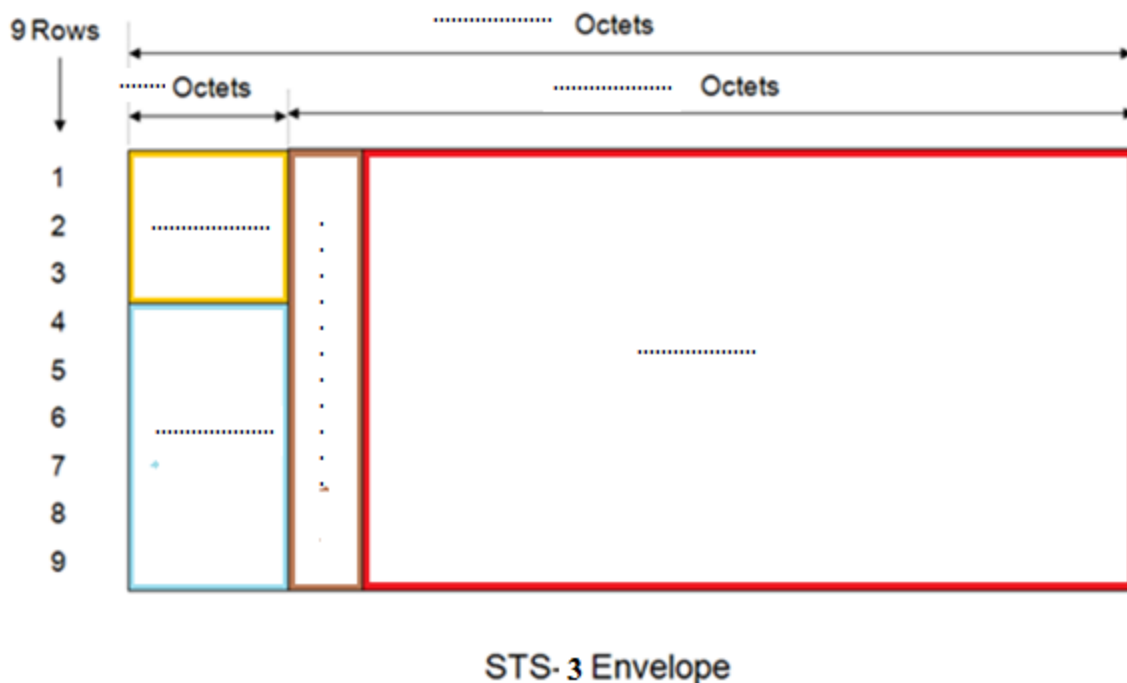
Topic 6 - Asynchronous Transfer Mode (ATM)

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   <u>(c) AAL Layer</u>

2. The ATM Layer is responsible for the simultaneous sharing of virtual circuits over a physical link (*cell multiplexing*)
(a) Physical Layer   <u>(b) ATM Layer</u>   (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.
<u>*(a) Traffic contract*</u>   *(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.
<u>(a) Cell Miss-insertion Rate (CMR)</u>   (b) Cell Loss Ratio   (c) Cell Error Rato (CER)

5. The ....is split into *A segmentation and Reassembly sublayer* (*SAR*) and a convergence sublayer
(a) Physical Layer   (b) ATM Layer   <u>(c) AAL Layer</u>

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

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