UNIVERSITY OF JOHANNESBURG

PROGRAM	:	NATIONAL DIPLOMA ENGINEERING : COMPUTER SYSTEMS ENGINEERING : ELECTRICAL
SUBJECT	:	**NETWORK SYSTEMS 2**
CODE	:	**CNS211**
DATE	:	SUMMER EXAMINATION 2015 19 NOVEMBER 2015
DURATION	:	(SESSION 1) 08:30 - 11:30
WEIGHT	:	40 : 60
TOTAL MARKS	:	106

ASSESSOR	:	MRS S AZIZ
MODERATOR	:	MR PM LINDEQUE 2411
NUMBER OF PAGES	:	6 PAGES AND 1 ANSWER SHEET

INSTRUCTIONS

1. THE ANSWER SHEET MUST BE HANDED IN TOGETHER WITH THE SCRIPT
2. POCKET CALCULATORS PERMITTED.
3. ATTEMPT ALL THE QUESTIONS.

2/...

INSTRUCTIONS TO STUDENTS

1. 100 MARKS = 100%. TOTAL MARKS AVAILABLE = 106
2. ATTEMPT ALL QUESTIONS.
3. ALL DIAGRAMS AND SKETCHES MUST BE DRAWN NEATLY, IN PROPORTION AND LABELLED CLEARLY.
4. THE MARK ALLOCATION SHOULD BE CONSIDERED WHEN ANSWERING QUESTIONS.
5. ALL WORK DONE IN PENCIL EXCEPT DIAGRAMS AND SKETCHES WILL BE CONSIDERED AS ROUGH WORK AND WILL NOT BE MARKED.
6. QUESTIONS MAY BE ANSWERED IN ANY ORDER, BUT ALL PARTS OF A QUESTION MUST BE KEPT TOGETHER.

SECTION A

This section is to be answered on the sheet provided. Mark an **X** over the corresponding block on your answer sheet. Hand in your answer sheet with your answer script.

QUESTION 1 - TRUE OR FALSE STATEMENTS

Answer true for a statement which you agree with and false to statements that you disagree with.

1.1. Content security on a network means ensuring confidentiality, maintaining communication integrity, and ensuring network availability. T/F

1.2. Multiplexing occurs when the segments of two or more messages can shuffle into each other and share the medium. T/F

1.3. File Transfer Protocol (FTP) is used for the transfer of mail messages and attachments. T/F

1.4. TCP is a simple, connectionless protocol, described in RFC 768. It has the advantage of providing low-overhead data delivery. The segments of communication in UDP are called datagrams. UDP sends datagrams as "best effort." T/F

1.5. The 8-bit TTL field in an IP header describes the maximum hops the packet can take before it is considered "lost" or undeliverable. Each router that handles the packet decrements the TTL field by at least 1. T/F

1.6. The loopback is a special address that hosts use to direct traffic to themselves. The loopback address creates a shortcut method for TCP/IP applications and services that run on the same device to communicate with one another. T/F

1.7. Contention-based methods allow any device to try to access the medium whenever it has data to send. These MAC methods are sometimes referred to as nondeterministic. T/F

1.8. Throughput is the transfer rate of actual usable data bits. Throughput is the data throughput less the protocol overhead bits, error corrections, and retransmission requests. T/F

QUESTION 1 (Continued)

1.9. Interframe spacing is the time measured from the last bit of the FCS field of one frame to the first bit of the Preamble of the next frame. T/F

1.10. Horizontal cabling refers to the cabling used to connect the telecommunication rooms to the equipment rooms, where the servers are often located. T/F

[10]

QUESTION 2 - MULTIPLE CHOICE

Choose the most correct answer and mark an x over the corresponding letter on your answer sheet (rough work can be done at the back of the answer script). Each question counts 2 marks.

2.1. What prioritizes traffic and its characteristics to manage data?
- A. Network administration
- B. Network traffic
- C. QoS strategy
- D. Network evaluation

2.2. What is the role of QoS in a converged network?
- A. Ensures that all traffic above available bandwidth levels is dropped
- B. Establishes delivery priorities for different types of communication in a network
- C. Determines precise priorities for all types of network communication
- D. Allows unused bandwidth to be shared by other organizations within the network

2.3. Which term describes a specific set of rules that determine the formatting of messages and the process of encapsulation used to forward data?
- A. Segmentation
- B. Protocol
- C. Multiplexing
- D. QoS
- E. Reassembly

2.4. Which one of the following is associated with Layer 4 of the OSI model?
- A. IP
- B. TCP
- C. FTP
- D. TFTP

2.5. What is GET?
- A. A client request for data
- B. A protocol that uploads resources or content to the web server
- C. A protocol that uploads information to the server in plain text that can be intercepted and read
- D. A response from a server

QUESTION 2(Continued)

2.6. Which of the following is a connection using Telnet?

A. File Transfer Protocol (FTP) session
B. Trivial File Transfer Protocol (TFTP) session
C. Virtual Terminal (VTY) session
D. Auxiliary (AUX) session

2.7. Which port number is used by HTTP?

A. 23
B. 80
C. 53
D. 110

2.8. Why does TCP use a sequence number in the header?

A. To reassemble the segments into data
B. To identify the application layer protocol
C. To indicate the number of the next expected byte
D. To show the maximum number of bytes allowed during a session

2.9. Which of the following is true about IP?

A. It is connection oriented.
B. It uses application data to determine the best path.
C. It is used by both routers and hosts.
D. It is reliable

2.10. Why is IP "media independent"?

A. It encapsulates Layer 1 instructions.
B. It works the same on all Layer 1 media.
C. It carries both video and voice data.
D. It works without Layer 1 media.

2.11. What subnet mask would be used with the hosts in the 128.107.176.0 /22 network?

A. 255.0.0.0
B. 255.248.0.0
C. 255.255.252.0
D. 255.255.255.0
E. 255.255.255.252

2.12. What are the contents of the data field in a frame?

A. 64 bytes
B. The network layer PDU
C. The Layer 2 source address
D. The data directly from the application that generated the data

2.13. What best describes the purpose of the physical layer?

A. Ensures reliable transmission of data across a physical link
B. Determines connectivity and path selection between two end systems
C. Establishes the physical addressing, networking topology, and media access
D. Defines the functional specifications for links between end systems and the electrical, optical, and radio signals

QUESTION 2(Continued)

1.1. Which of the following is NOT true?

A. 1 Gbps = 1,000,000,000 bits per second
B. 1 kbps = 1000 bits per second
C. 1 Mbps = 100,000 bits per second
D. 1 Tbps = 1,000,000,000,000 bits per second

1.2. Which field of an Ethernet frame is used for error detection?

A. Type
B. Preamble
C. Frame Check Sequence
D. Destination MAC Address

[30]

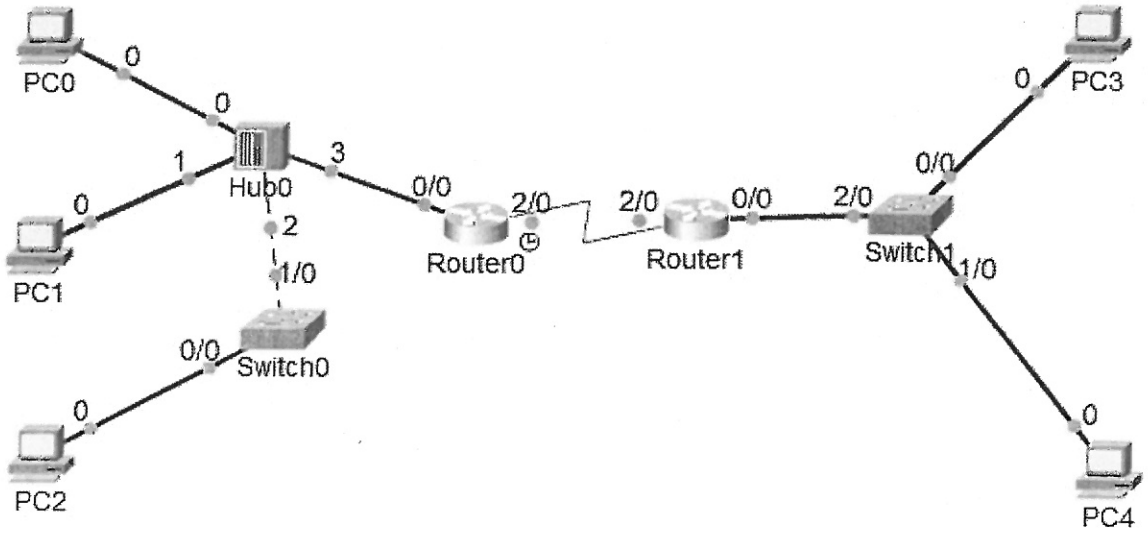
SUB TOTAL SECTION A: 40

SECTION B

This section is to be answered on your answer script.

QUESTION 3

2.1. Using Figure 3.1, answer the questions, which follow



2.1.1. If PC2 sends a packet to PC1, will PC0 also get this packet? Explain your answer.

(2)

2.1.2. If PC1 sends a packet to PC3, will PC4 also get this packet? Explain your answer.

(2)

2.1.3. If PC1 sends a packet to PC2, will the router also get this packet? Explain your answer.

(2)

[6]

QUESTION 4

4.1. Give any three benefits of a layered model.

(3)

4.2. With the help of a diagram, explain SMB Protocol. Also, give the three tasks that the SMB messages can perform.

(8)

4.3. Explain the three types of port numbers - Well-known ports, Registered ports and Dynamic ports.

(3)

4.4. Give the basic structure of an IPv4 address. Also, give an example for IPv4 address.

(5)

4.5. Explain the Class A, Class B and Class C block of addressing.

(6)

4.6. With the help of a diagram, explain the Ethernet frame.

(8)

4.7. Explain the structure of a co-axial cable and shielded twisted pair cable with the help of diagrams.

(8)

4.8. Explain the CSMA/CD process and the three steps involved in it.

(10)

4.9. Explain the two configuration files in a Cisco network device. Also, give the diagram showing the relationship between the two.

(9)

[60]

SUB TOTAL SECTION B: 66

TOTAL: 106
FULL MARKS: 100

STUDENT SURNAME: _____

STUDENT NUMBER: _____

ANSWER SHEET

(This sheet must be handed in with your examination script)
Put a large clear cross(X) over the box you have chosen as your answer.

QUESTION 1

1.1	True	False
1.2	True	False
1.3	True	False
1.4	True	False
1.5	True	False

1.6	True	False
1.7	True	False
1.8	True	False
1.9	True	False
1.10	True	False

(10)

QUESTION 2

2.1	A	B	C	D	E
2.2	A	B	C	D	E
2.3	A	B	C	D	E
2.4	A	B	C	D	E
2.5	A	B	C	D	E
2.6	A	B	C	D	E
2.7	A	B	C	D	E
2.8	A	B	C	D	E
2.9	A	B	C	D	E
2.10	A	B	C	D	E
2.11	A	B	C	D	E
2.12	A	B	C	D	E
2.13	A	B	C	D	E
2.14	A	B	C	D	E
2.15	A	B	C	D	E

(30)

[40]