



**NAMIBIA UNIVERSITY  
OF SCIENCE AND TECHNOLOGY**

**FACULTY OF COMPUTING AND INFORMATICS**

**DEPARTMENT OF COMPUTER SCIENCE**

<b>QUALIFICATION: BACHELOR OF COMPUTER SCIENCE</b>	
<b>QUALIFICATION CODE: 07BACS</b>	<b>LEVEL: 7</b>
<b>COURSE: INTRODUCTION TO COMPUTER NETWORKING</b>	<b>COURSE CODE: ICN511S</b>
<b>DATE: JULY 2019</b>	<b>SESSION: 2</b>
<b>DURATION: 3 HOURS</b>	<b>MARKS: 100</b>

<b>SECOND OPPORTUNITY / SUPPLEMENTARY EXAMINATION QUESTION PAPER</b>	
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**INSTRUCTIONS**

1. Answer **all** questions.
2. Please, ensure that your writing is **legible, neat** and **presentable**.
3. When answering questions you should be led by the allocation of marks.
4. Clearly mark rough work as such or cross it out unambiguously in ink.

**PERMISSIBLE MATERIALS**

1. Calculator

**THIS QUESTION PAPER CONSISTS OF 5 PAGES** (Including this front page)

**Question 1**

**[Marks:15]**

1.1 Each IP packet must contain

- A. Only Source address
- B. Only Destination address
- C. Source and Destination address
- D. Source or Destination address

1.2 Routing protocols are configured at

- A. Routers
- B. Layer 2 switch
- C. A and B
- D. none of the above

1.3 PC A may have two default gateways so that when default gateway A is down it uses default gateway B

- A. True
- B. False

1.4 End user devices can only interact with one application layer protocol at any given time

- A. True
- B. False

1.5 Which of the following is correct regarding Class B category of IP address

- A. Network bit – 14, Host bit – 16
- B. Network bit – 12, Host bit – 14
- C. Network bit – 18, Host bit – 16
- D. Network bit – 16, Host bit – 16

1.6 What is the meaning of Bandwidth in Network?

- A. Transmission capacity of a communication channels
- B. Connected Computers in the Network
- C. Class of IP used in Network
- D. None of Above

1.7 Which methods are commonly used in Server Socket class?

- A. Public Output Stream get Output Stream ()
- B. Public Socket accept ()
- C. Public synchronized void close ()
- D. None of the mentioned

1.8 What is the default mask for a class C Network?

- A. 255.255.255.1
- B. 255.255.255.255
- C. 255.255.255.254
- D. 255.255.255.0

1.9. The 4 byte IP address consists of

- A. Network address
- B. Host address
- C. Both network address & host address
- D. None of the mentioned

1.10. The client in socket programming must know which information?

- A. Both IP address of Server & Port number
- B. IP address of Server
- C. B. Port number
- D. None of the mentioned

1.11 Which classes are used for connection-less socket programming?

- A. Datagram Socket
- B. Datagram Packet
- C. Both Datagram Socket & Datagram Packet
- D. None of the mentioned

1.12 Ethernet frame consist of

- A. MAC Address
- B. IP address
- C. both MAC address and IP address
- D. none of the above mentioned

1.13. Which multiple access technique is used by IEEE 802.3 standard for wired LAN?

- A. CDMA/CA
- B. CSMA/CD
- C. ALOHA
- D. None of the mentioned

1.14. Which transmission media has the highest transmission speed in a network?

- A. Coaxial cable
- B. Twisted pair cable
- C. Optical fiber
- D. electrical cable

1.15 Network applications can use two transport layer protocols simultaneously

- A. True
- B. False

**Question 2****[Marks:25]**

- 2.1 Name two application layer protocols that uses TCP. (2 marks)
- 2.2 State two benefits of UDP over TCP. (2 marks)
- 2.3 List three elements of the TCP header that are not part of the UDP header. (3 marks)
- 2.4 Assuming a TCP connection between a server and a client. How does a TCP client know which sequence numbers the server is using? (3 marks)
- 2.5 Discuss how TCP achieves error control during communication. (4 marks)
- 2.6 Identify any two characteristics of a well-designed network. (3 marks)
- 2.7 State the implications to packets of having router components characterised by the following features:
- i) Small outgoing buffer size (1 mark)
  - ii) Slow switching fabric (1 mark)
  - iii) Fast incoming rate (1 mark)
- 2.8 Your end-to-end delay is measured to be 0.0098 seconds. Name two types of delays which contributed to this delay. (2 marks)
- 2.9 What is the significance of the physical layer? Mention three points. (3 marks)

**Question 3****[Marks:25]**

- 3.1 You are having trouble connecting to the Internet using your laptop. How will the knowledge of the OSI reference model assist you to solve the issue? (3 marks)
- 3.2 Outline the steps involved in creating the server side of socket programming. (4 marks)
- 3.3 Discuss the importance of source port numbers and destination port numbers in relation to layer 4 of TCP/IP. Where do communicating devices get these port numbers from? (5 marks)
- 3.4 Differentiate between layer 2 and layer 3 switches (4 marks)
- 3.5 Name any three network commands and state their uses. (3 mark)
- 3.6 Name two examples of servers available on the Internet. Use a diagram to show how these servers connect to the Internet and state the role played by each component. (6 marks)

**Question 4**

**[Marks:25]**

4.1 Complete the table below with three types of network addresses required for networked devices. For each address, state its function, and indicate how devices obtain it. (9 marks)

Address	Function	Method obtained

4.2 Your end user device is failing to access the Internet through your University’s Ethernet LAN. Identify any two physical layer troubleshooting techniques that you can apply. (3 marks)

4.3 Differentiate between recursive and iterative DNS queries. Provide two differences per DNS query. (4 marks)

4.4 Discuss the media access control protocol used in IEEE802.11. (4 marks)

4.5 Name two dis-advantages of wireless networks over wired networks. (2 mark)

4.6 Assume that you want to send a parcel through a courier service to a friend who stays out of town. Explain how you will apply the concept of encapsulation to the parcel. (3 marks)

**Question 5**

**[Marks:10]**

5.1 Consider the following IP address to answer the questions below.

10.100.12.13 /8

a) Determine:

i) the network number (2 marks)

ii) the broadcast address (2 marks)

iii) the number of host bits (2 marks)

5.2 State the function of the network number? (2 marks)

5.3 How does the end user device use the subnet mask to determine the network number? (2 marks)

**GOODLUCK!**