


Faculty of Information and Communication Technology								
 <p><b>Tshwane University of Technology</b> <i>We empower people</i></p> <p>I declare that I am familiar with, and will abide to the rules of Tshwane University of Technology</p> <p>Signature: _____</p>	<p align="center"><b>SYSTEMS SOFTWARE IIB</b></p> <p align="center"><b>(SSF24BT)</b></p>							
	<p align="center"><b>CLASS TEST I</b> 60 minutes Friday, 13 March 2015 Full Marks:50</p>					<p align="center">Lecturers: Mr ME Lonfo &amp; Mr NP Rambau</p>		
						<p><b>Group:</b></p>		
						<p><b>Class List Number:</b></p>		
	<p><b>Student number</b></p>							
<p><b>Surname</b></p>				<p><b>Initials</b></p>			<p align="right">%</p>	

### QUESTIONS

1. Circle the correct answer for each of the questions below. [10]

- 1) A \_\_\_\_ is a specialized device that allows multiple networks or multiple parts of one network to connect and exchange data.
  - a. Segment
  - b. Host
  - c. Node
  - d. Connectivity device
  
- 2) Which statement accurately describes the OSI model?
  - a. It describes how software programs interact with humans.
  - b. It prescribes the type of hardware or software that should support each layer.
  - c. It describes how software programs interact with other software programs.
  - d. It describes a theoretical representation of what happens between two nodes communicating on a network.
  
- 3) Which OSI model layer initiates the flow of information?
  - a. Physical

- b. Session
  - c. Application
  - d. Presentation
- 4) In which OSI model layer(s) do NICs operate?
- a. Physical
  - b. Network and Physical
  - c. Data Link
  - d. Physical and Data Link
- 5) When signals are free to travel in both directions over a medium simultaneously, the transmission is considered \_\_\_\_.
- a. simplex
  - b. multiplex
  - c. full-duplex
  - d. half-duplex
- 6) The subprotocol that enables TCP/IP to internetwork - that is, to traverse more than one LAN segment and more than one type of network through a router is \_\_\_\_.
- a. TCP
  - b. IP
  - c. UDP
  - d. ICMP
- 7) In IPv4 addressing, a node with an IP address of 168.34.88.29 belongs to a Class \_\_\_\_ network.
- a. A
  - b. B
  - c. C
  - d. D
- 8) \_\_\_\_ is a technology used with fiber-optic cable, which enables one fiber-optic connection to carry multiple light signals simultaneously.
- a. Statistical multiplexing
  - b. WDM (wavelength division multiplexing)
  - c. TDM (time division multiplexing)
  - d. FDM (frequency division multiplexing)
- 9) \_\_\_\_ provide a Web-based client for checking e-mail.
- a. Web servers
  - b. Mail servers
  - c. File servers

- d. Access servers

10) Which OSI model layer manages data encryption?

- a. Physical
- b. Session
- c. Presentation
- d. Application

2. Give a brief explanation on why it's important to multiplex signals. [4]

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3. Write a short discussion on *Collision Domain* and *Broadcast Domain*. [4]

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4. Compare the *UDP* and *TCP* protocols by stating any four (4) differences between them. [4]

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5. Differentiate Peer-to-Peer and Client/server network. [4]

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6. Client/server networks are said to be scalable and secure. [5]

a. Do you agree with this statement? [1]

b. If yes, what make client/server network scalable and secure. [4]

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7. For each node in a computer network to transmit or receive data, it needs addresses. [5]

a. How many types of addresses each node in a computer network has? [1]

b. Name and explain the role of each. [4]

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[illegible]

8. Describe the role of Network layer protocols including the formation of packets, routing and factors considered in routing decisions. [6]

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9. The South African First Bank, want to create a new branch in a rural area to provide banking services to the locale communities or visitors. The building hosting the new branch will have five (5) rooms among which one will contains a replica of the bank database server and the applications server allowing the employees to perform their duties ( create, debit, credit customer account, etc..). The branch

should be connected to the bank data centre situate at 1200 km. [8]

As a network consultant for South African First Bank you have been asked to interconnect the computers and printer used by the employees as well as the branch to the data centre.

- Identify three possible types of network in your project. [3]
- Which type of media will be the best to interconnect the branch and the data center knowing that the bank doesn't want the branch activities to be disturbed by bad weather conditions? Justify your choice. [3]
- What could be the cost involve in installing that media knowing that the rural area has no existing network infrastructure. [2].
- The CIO want you to implement IPv6 in the new branch. What should be your main two concerns if the data center still operate with IPv4? [4] (bonus question)

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

This image shows a full page of white paper with horizontal blue or grey ruling lines, typical of notebook paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.