



ELIZADE UNIVERSITY

WURAOLA ADEOJO CLOSE

P.M.B 002, ILARA-MOKIN, ONDO STATE, NIGERIA.

TITLE OF EXAMINATION: B.Sc EXAMINATION

FACULTY: BASIC AND APPLIED SCIENCES

DEPARTMENT: MATHEMATICS & COMPUTER SCIENCE

SESSION: 2020/2021

SEMESTER: 1ST

COURSE CODE: CYB 205

CREDIT UNIT: TWO (2)

COURSE TITLE: INTERNET ARCHITECTURE AND EMERGING TECHNOLOGIES

INSTRUCTION: ATTEMPT ANY THREE (3) QUESTIONS

TIME: 2 HOURS

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1. (a) With emphasis on the OSI model layers, explain the steps involved in sending data on a typical local area network that also leverages on the internet? **(5 marks)**
(b) Explain the encapsulation process as employed in sending a message from one node to another **(3 marks)**
(c) Draw the Open System Interconnection (OSI) model and explain why it is critical to data communication on networks? **(7 marks)**
(d) What is a protocol in computer networking? **(5 marks)**
 2. (a) List and explain five devices that operate at the physical layer of the OSI model and their functions? **(5 marks)**
(b) List and explain four connectivity devices found at the Data Link layer and the criticality of their presence (functions)? **(4 marks)**
(c) Which major appliance operates at layer 3 (network layer) of the OSI model? **(1 mark)**
(d) With explanations and the help of a detailed diagram, explain the routing process in a typical network with the use of switching and routing components? **(7 marks)**
(e) Considering a network of computers for an effective communication, explain the term "protocol suite"? **(3 marks)**
 3. (a) Draw a typical OSI model diagram whose purpose is to list the PDUs at each layer, along with the types of devices that work at each layer of the OSI model? **(7 marks)**
(b) For hosts on a network to effectively communicate and leveraging on TCP/IP, what is the relevance of the address resolution protocol? **(5 marks)**

- (c) With the help of a detailed diagram, and relevant explanation, do a comparison of the OSI and TCP/IP models? **(8 marks)**
4. (a) What is a protocol analyzer? **(2 marks)**
(b) Explain how a protocol analyzer relates with a packet sniffer and its interchangeability cum independent implementation scenario? **(3 marks)**
(c) Write a short note on each of the following?
(i) Internet (ii) Intranet (iii) Extranet **(3 marks)**
(d) Explain the concept of the domain name system (DNS) and buttress your point with a simple diagram **(8 marks)**
(e) List any four (4) networking attacks that are known to you? **(4 marks)**
5. (a) What is network segmentation? **(5 marks)**
(b) Explain what a VLAN means and why it is necessary in a big network? **(6 marks)**
(c) What is an intrusion detection system? **(3 marks)**
(d) Explain the operational details of the network-based intrusion detection systems? **(6 marks)**