KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2024/2025 ACADEMIC YEAR
FIRST YEAR, FIRST SEMESTER EXAMINATION
FOR THE BACHELOR OF ECONOMICS AND FINANCE

Date: 9th August, 2024
Time: 2.30pm –4.30pm

KEC 2102 ECONOMICS DIGITAL COMMUNICATION

INSTRUCTIONS TO CANDIDATES

ANSWER **QUESTION ONE (COMPULSORY)** AND **ANY OTHER TWO** QUESTIONS

QUESTION ONE (30 MARKS)

a) Without IT to manage a business systems and computer network information, any unexpected breakdown or failure could bring all daily business activity to a halt. IT is the cornerstone of most business operations, providing the infrastructure that supports a great deal of both front-end and back-end processes. Explain the terms Information Technology and Information Communication Technology. (4 Marks)

b) Communication is defined as a process in which more than one computer transfers information, instructions to each other and for sharing resources. Or in other words, communication is a process or act in which we can send or receive data. List four components of data communication. (4 Marks)

c) A network of computers is defined as an interconnected collection of autonomous computers. Autonomous means no computer can start, stop or control another computer. Computer networks are at the core of digital communication. Computer networks extend interpersonal communications by electronic means with various technologies. Discuss the benefits / significance of digital communication. (4 Marks)

d) In the interconnected digital landscape of today, data communication is the lifeblood that enables the seamless exchange of information across various devices and systems. Transmission mode means transferring data between two devices. It is also known as a communication mode. With the aid of a diagram and an example discuss simplex mode of communication. (4 Marks)

e) Transmission media is a communication channel that carries the information from the sender to the receiver. Data is transmitted through the electromagnetic signals. Transmission media is a communication channel that carries the information from the sender to the receiver. Differentiate guided and unguided medium. (4 Marks)

f) Standards are the set of rules for data communication that are needed for the exchange of information among devices. It is important to follow Standards which are created by various Standard Organizations like IEEE, ISO, ANSI, etc. Describe De facto and De Jure standards.

(4 Marks)

g) A computer network is a set of computers sharing resources located on or provided by network nodes. It is a system that connects two or more computing devices for transmitting and sharing information. Computers use common communication protocols over digital interconnections to communicate with each other. Discuss any two types of Networks. (4 Marks)

h) Network topology plays a major role in how a network function. Namely, the topology has a direct effect on network functionality. A well-defined network topology makes it easier for network admins to locate faults, troubleshoot issues and to allocate network resources. What do you understand by the term topology? (2 Marks)

QUESTION TWO (20 MARKS)

a) Network devices, also known as networking hardware, are physical devices that allow hardware on a computer network to communicate and interact with one another. Discuss any four network devices.

(8 Marks)

b) Data communication refers to the electronic transmission of information between two devices by using a communication channel such as a wire pair cable or fiber optics. Delivery, accuracy, timeliness, and jitter are the four important characteristics of a good data communication system. Discuss. (8 Marks)

c) Gaining a better understanding of network classification is important in establishing the requirements and the costs which in return supports efficient decision Making. Expound on the characteristics of Local Area Network (LAN). (4 Marks)

QUESTION THREE (20 MARKS)

a) Raymond John "Ray" Noorda (19 June 1924 – 9 October 2006) was a father of network computing. The Novell Inc founder who battled Microsoft Corporation in the early years of network computers. Noorda became chief executive of Novell in 1983. A network must be able to meet certain number of criteria. The most important are Performance, Reliability and Security. Discuss the three elements. (6 Marks)

b) Administrators can use network topology diagrams to determine the best placements for each node and the optimal path for traffic flow. With a well-defined and planned-out network topology, an organization can more easily locate faults and fix issues, improving its data transfer efficiency. Illustrate four network topologies. (8 Marks)

c) Cloud computing: Refers storing and accessing the data and programs on remote servers that are hosted on the internet instead of the computer's hard drive or local server. Discuss three cloud deployment models. (6 Marks)

QUESTION FOUR (20 MARKS)

a) TCP is a protocol that converts data into packets so that it can be sent between a server and a client. Organizations use TCP to transfer content such as files, text, images and emails because it guarantees that the packets will be delivered accurately. Discuss the use of the SNMP, SMTP, ICMP & HTTP protocols. (8 Marks)

b) A communication network refers to the method that employees pass on information to other employees in an organization. The network is divided based on the number of people involved in the communication, organizational size and nature of the communication network. Discuss 4 types of communication Networks. (8 Marks)

c) Information technology ethics is the study of the ethical issues arising out of the use and development of electronic technologies. Its goal is to identify and formulate answers to questions about the moral basis of individual responsibilities and actions, as well as the moral underpinnings of public policy. List four ethical issues that may arise from the adoption digital communications. (4 Marks)

QUESTION FIVE (20 MARKS)

a) As a modern business, it is vital to look for some of the best ways of being able to improve your security, and protect the company long-term. The best way of being able to achieve this is to make sure you focus on the best ways of achieving a safer and more secure company. Discuss the CIA triad in cybersecurity. (6 Marks)

b) A network protocol is a mechanism or a set of procedures that enables devices to communicate back and forth across the internet. In order to communicate together, two devices must support the same protocol or a gateway will need to be used to translate the communication. Elaborate three main categories of Network protocols. (6 Marks)

c) A network is considered to be fully meshed if all nodes are directly connected to all other nodes and partially meshed if only some nodes have multiple connections to others. Discuss advantages and disadvantages of a mesh topology. (8 Marks)