

PAN AFRICA CHRISTIAN UNIVERSITY

BACHELORS OF INFORMATION COMMUNICATION TECHNOLOGY

END OF TERM EXAMINATION

DEPARTMENT: COMPUTING & INFORMATION TECHNOLOGY

COURSE CODE: BIT308

CAMPUS: ROYSAMBU

COURSE TITLE: COMPUTER NETWORKS

EXAM DATE: TUESDAY

TIME: 2:00 PM – 5:00 PM

INSTRUCTIONS

- This exam carries a total of SIX Questions of [10 Marks Each]
- Section One (I) is compulsory.
- Answer any 3(Three) Questions from Section Two (II)
- Read all questions carefully before attempting.

Section One Compulsory 10 marks

Question One.

- a) A small research laboratory requires a network infrastructure where multiple devices, including computers, printers, and scientific instruments, can communicate with each other within a limited geographic area. Discuss what type of computer network would you recommend for this local environment and why. **[2 marks]**
- b) A mobile app development company has teams working on different aspects of an application, including front-end design, back-end development, and quality assurance. The teams need to collaborate in real-time, share code, and test the application simultaneously. Identify then justify which type of computer network architecture would best support this collaborative development environment. **[2 marks]**
- c) A manufacturing facility is planning to implement a computer network to monitor and control automated production processes. **The environment is noisy with electromagnetic interference due to heavy machinery.** Analyze the best type of transmission media you would recommend for a reliable communication in such an industrial setting. **[3 marks]**
- d) You have a small office space that requires a cost-effective and easy-to-install transmission medium for connecting computers and printers within close proximity. The office space is already equipped with existing infrastructure, including walls and ceilings. Advice and justify the transmission media type you would suggest for this scenario. **[3 marks]**

Section Two Attempt any Three Questions.

Question Two.

- a) Analyze the appropriate remedies for the following network bottlenecks.
- i. Crosstalk. **[3 marks]**
 - ii. Signal Attenuations. **[3 marks]**
- b) Discuss the following network characteristics used in assessing most network operations.

- i. Performance [2 marks]
- ii. Reliability. [2 marks]

Question Three.

- a)** Discuss TWO key roles and responsibilities of network administrators in modern organizations. [4 marks]
- b)** Provide insights into the key THREE skills and best practices network administrators should possess to effectively manage and maintain network infrastructure. [6 marks]

Question Four

Denial of service and Distributed Denial of service is one of the most common attacks experienced across any given network. With aid of a well labeled diagram show how an attacker can successfully handle and take control of a given Network. [10 marks].

Question Five.

- a)** Musalia was to assigned tasks to troubleshoot student's lab network, identify the structured Steps to follow in troubleshooting the entire network.
- b)** Discuss when and how you would use the following network troubleshooting commands.
 - i. ifconfig. [2 marks]
 - ii. ping (ip/domain/computer name) -t [2 marks]

Question Six.

- a)** Illustrate the cable arrangements on how you would terminate Straight through UTP or STP copper cable using *ANSI/TIA/EIA-568-B*, standards. [5 marks].
- b)** Illustrate the cable arrangements on how you would terminate crossover UTP or STP copper cable using *ANSI/TIA/EIA-568-B*, standards. [5 marks].

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