

**UNIVERSITY COLLEGE TATI (UCTATI)****FINAL EXAMINATION QUESTION BOOKLET**

COURSE CODE	: BNS 4183
COURSE	: OPTIMIZING CONVERGED NETWORKS
SEMESTER/SESSION	: 1 - 2022/2023
DURATION	: 3 HOURS

Instructions:

1. This booklet contains 5 questions. Answer ALL questions.
2. All answers should be written in answer booklet.
3. Write legibly and draw sketches wherever required.
4. The use of any type of calculator is not permitted.
5. If in doubt, rise up your hands and ask the invigilator.

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO**THIS BOOKLET CONTAINS 4 PRINTED PAGE INCLUDING COVER PAGE**

QUESTION 1

ISDN is a set of standards that allow data and voice to be carried on copper wire from the telephone exchange to customer premises.

- a. Give full acronym of ISDN. (1 marks)
- b. What are **THREE (3)** differences between BRI-ISDN and PRI-ISDN? (6 marks)
- c. Describe the functions of ISDN compare to PSTN or PTT (POTS) in a converged network area. (4 marks)
- d. Justify **TWO (2)** reasons why we need for moving from ISDN to T1 Carrier System. (4 marks)

QUESTION 2

Converged network traffic occurs when one network provider delivers networking services for voice, data, and video in a single network offering, instead of providing a separate network for each of these services.

- a. Give **TWO (2)** examples of converged network traffic. (2 marks)
- b. What are the 3 building blocks of the hierarchical model? Describe. (6 marks)
- c. Briefly explain the special needs of voice and video traffic. (4 marks)
- d. What types of traffic could be considered best-effort and less-than-best-effort? (4 marks)
- e. What are the 3 layers of SONA? List and explain briefly. (6 marks)

QUESTION 3

Voice over Internet Protocol (VoIP) is a technology that allows you to make voice calls using a broadband Internet connection instead of a regular (or analog) phone line.

- a. List **THREE (3)** benefits of a VoIP network. (6 marks)
- b. Explain **THREE (3)** stages of a VoIP call process. (6 marks)
- c. What causes jitter in voice communication? (2 marks)
- d. Describe in detail the process of analog to digital signal conversion in VoIP. (6 marks)

QUESTION 4

Quality of Service (QoS) is a set of technologies that work on a network to guarantee its ability to dependably run high-priority applications and traffic under limited network capacity. QoS technologies accomplish this by providing differentiated handling and capacity allocation to specific flows in network traffic.

- a. Identify **FOUR (4)** major quality issues with converged networks. (8 marks)
- b. List **FOUR (4)** types of delay. (4 marks)
- c. Describe packet loss and give **THREE (3)** ways to prevent or reduce packet loss in the network. (8 marks)
- d. Explain why converged networks require QoS from a manager perspective? (4 marks)

QUESTION 5

- a. QoS is important to both the end user and the network administrator. Show in details the process of implementing QoS using three series of basic steps. Sketch any supporting diagrams if required. (10 marks)
- b. Cisco AutoQoS provides the user with a simple and intelligent command-line interface (CLI) for enabling campus LAN and WAN QoS for Voice over IP (VoIP) on Cisco switches and routers. Cisco AutoQoS is supported on many routers and switches. Describe **THREE (3)** common issues with Cisco AutoQoS, and give its solutions. (9 marks)

----- **END OF QUESTIONS** -----