



KENYA METHODIST UNIVERSITY

END OF 2ND TRIMESTER 2010 EXAMINATIONS

FACULTY : **SCIENCE AND TECHNOLOGY**
DEPARTMENT : **COMPUTER SCIENCE & BUSINESS INFORMATION**
UNIT CODE : **CISY 434**
UNIT TITLE : **TELECOMMUNICATIONS NETWORKS II**
TIME : **2 HOURS**

Instructions:

- Answer question 1 and any other two questions.

Question 1 (Compulsory, 30 marks)

- Briefly explain the key design issues that a network designer should take into consideration when designing a corporate network. (6 marks)
- Describe the core features of a corporate network architecture (4 marks)
- Distinguish between circuit switching and packet switching. In each case explain the strengths and weaknesses of each switching technique. (8 marks)
- Briefly describe the core characteristics of the 3G telephone network. Explain the advantages of this network over the 2G network. (8 marks)
- List down and explain the core components of a wireless network. (4 marks)

Question 2 (20 marks)

- Identify and explain the two major classes of routing protocols. (4 marks)
- If an IP network has a valid mask of x , derive a formula for the number of valid hosts on that network, assuming there is no further subnetting. (5 marks)
- Select a subnet mask for 172.27.0.0 so that there are at least 500 subnets with at least 100 host addresses available on each subnet. (3 marks)
- You have been told to configure 192.168.13.175 on an interface with a mask of 255.255.255.240. Is there a problem? If so, what is it? (3 marks)

Question 3 (20 marks)

- Explain the roles of each of the four key subsystems of the GSM network. (8 marks)
- Using diagrams to illustrate describe the typical design topology for a Wireless LAN (WLAN) (7 marks)
- Voice over Internet protocol (VOIP) has become very popular in recent times, briefly describe the operation of VOIP explain its core technologies. (5 marks)

- d) Describe in detail the tools software that can be used by a network designer to monitor the performance of a network. (5 marks)

Question 4 (20 marks)

- a) A network designer has been asked to advise whether a corporation that has multiple branches across cities in a country should use a Frame-Relay Network or a Dedicated Circuit for their WAN. The organization has an unlimited budget for the project. Explain in detail the features of both network options and advise the designer on which option would be appropriate. Provide full justification for your choice. (16 marks)
- b) Briefly describe the IEEE 802.11 standard for implementing wireless networks. (4 marks)