



KENYA METHODIST UNIVERSITY

END OF 1ST TRIMESTER 2010 EXAMINATIONS

FACULTY : **COMPUTING AND INFORMATICS**
DEPARTMENT : **COMPUTER INFORMATION SYSTEMS**
UNIT CODE : **CISY 436**
UNIT TITLE : **WIRELESS COMMUNICATIONS**
TIME : **2 HOURS**

Instructions:

- Answer question 1 and any other 2 questions.

Question 1 (compulsory)

- a) Explain the terms; (3 mks)
- Bandwidth
 - Fading
 - Unbound media
- b) Describe the term electromagnetic spectrum. (2 mks)
- c) Describe the following three types of wireless communication media. (6 mks)
- Satellite
 - Terrestrial microwave
 - Infrared
- d) Distinguish between noise and attenuation. (4 mks)
- e) Describe cross optimization design principle in relation to wireless networks. (3 mks)
- f) Using a diagram, describe the term "PICONET". (3 mks)
- g) Describe the term frequency hopping stating one advantage. (3 mks)
- h) A local enterprise is built on an area estimated to be about 20 acres of land. Some buildings are tall while others are low lying depending on utility. The management of this enterprise has planned for a network infrastructure to link the various buildings. Various companies have been contacted for advice most of them have proposed wireless network.

Required;

- Why do you think the companies might have proposed a wireless network? (2 mks)
- State one possible benefit and one limitation that the enterprise may experience if they implement this wireless network. (2 mks)
- What wireless media do you think would provide optimal solution? (2 mks)

Question 2

- a) What is wireless communication? With the aid of a diagram, explain the various elements of a wireless communication systems model. (7 mks)
- b) Explain the following terms as used in wireless network. (6 mks)
 - i) Antennae
 - ii) Wireless station
 - iii) Server
- c) Compare and contrast IEEE 802.11a and IEEE 802.11b standards. (4 mks)
- d) Explain the concept of frequency re-use and state its importance. (3 mks)

Question 3

- a) What is a wired equivalent privacy (WEP). (3 mks)
- b) Describe layering as used in wireless networks. (3 mks)
- c) With the aid of a diagram discuss the concept of Bluetooth, listing at least three devices that can be connected. (3 mks)
- d) Explain any five benefits of using a wireless local area network (WLAN). (5 mks)
- e) Using a sketch diagram, describe how cellular telephony works. (6 mks)

Question 4

- a) Explain the following components of satellite communications.
 - i) Earth stations
 - ii) Uplink
 - iii) Downlink
 - iv) Transponder (4 mks)
- b) What is an antenna? Describe its functions in the wireless communications. (3 mks)
- c) Explain the term signal propagation and describe three modes of signal propagation. (5 mks)
- d) Explain the term multipath and describe its propagation modes. (5 mks)
- e) List any three international companies operating in Kenya that offer wireless communication solutions (installations, equipment, maintenance) (3 mks)