

KABARAK



UNIVERSITY

EXAMINATIONS

2008/2009 ACADEMIC YEAR

FOR THE DEGREE OF BACHELOR OF EDUCATION SCIENCE

COURSE CODE: COMP 222

COURSE TITLE: TELECOMMUNICATIONS AND COMPUTERS

STREAM: SESSION V

DAY: FRIDAY

TIME: 9.00 – 11.00 A.M.

DATE: 10/04/2009

INSTRUCTIONS:

- 1. This question paper has FIVE questions**
- 2. Answer question ONE and any other TWO questions**

PLEASE TURN OVER

QUESTION ONE (30 MARKS) COMPULSORY

- (a) Explain the meaning of the following terms
- i. Duplex transmission
 - ii. Latency
 - iii. DSL
 - iv. Workgroup
- (b) Distinguish between the following
- i. Peer to peer and client-server networks
 - ii. A router and a gateway
- (c) List and explain six benefits of networks
- (d) Compare and contrast star and bus network topologies
- (e) Explain the functions of a Network Operating System
- (f) Determine the time taken to download a 7kB document by a 56k modem if the system has a system delay of 3 seconds

(8mks)

(4mks)

(6mks)

(4mks)

(5mks)

(3mks)

QUESTION TWO (20 MARKS) ELECTIVE

- (a) What is meant by the term analog signal?
- (b) Distinguish between data and signal giving an example of each
- (c) Explain the terms *bits*, *digital signal*, *baud rate*, and *through put*
- (d) The line below is a message sent over a network

Main memory is divided into two types: 1. RAM (Random Access Memory) which can be altered by the CPU (read and write), 2. ROM (Read Only Memory) which the CPU can only read from (not write to).

if the message takes 0.2 milliseconds to be transmitted over the network, determine

- i. the transfer rate in bps
- ii. baud in kbps

(4mks)

(3mks)

QUESTION THREE (20 MARKS) ELECTIVE

- (a) What is Private Branch Exchange (PBX) telephone systems?
- (b) Describe the components that make PBX
- (c) Explain the functions of a PBX system
- (d) Discuss Hosted PBX, IP-PBX and mobile PBX giving at least one advantage and one disadvantage of each

(2mks)

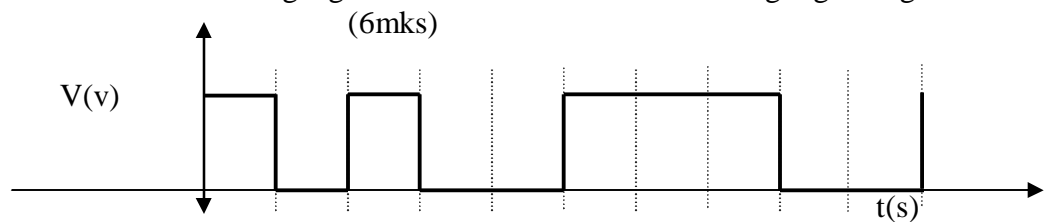
(8mks)

(4mks)

(6mks)

QUESTION FOUR (20 MARKS) ELECTIVE

- (a) What is MODEM? (2mks)
- (b) Digital signals are preferred over analog signals in data transmissions over computer networks. Give two reasons for this. (2mks)
- (c) Describe the speed ranges that a MODEM can transmit data (6mks)
- (d) Describe how a MODEM functions in modulating and demodulating signals (4mks)
- (e) In modulating of signals, a MODEM codes a binary digit 1 as compressions and a binary digit 0 as rarefactions. Sketch an analog signal that results from the following digital signal



QUESTION FIVE (20 MARKS) ELECTIVE

- (a) There are several types of protocols that exist. Why do you think so? (3mks)
- (b) Explain difference between the transport and network layers of the OSI reference model layers (8mks)
- (a) For each of the following protocols, write their names in full, outline their functions and state the OSI reference model layer they operate
- TCP
 - FTP
 - UDP
- (9mks)