KABARAK UNIVERSITY

SUPPLEMENTARY/SPECIAL EXAMINATIONS

2008/2009 ACADEMIC YEAR

FOR THE DEGREE OF BACHELOR OF EDUCATION SCIENCE

COURSE CODE: **COMP 222**

COURSE TITLE: **TELECOMMUNICATIONS AND COMPUTERS**

STREAM: **SESSION II**

DAY: **THURSDAY**

TIME: **9.00 - 11.00 A.M.**

DATE: **19/03/2009**

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. Modem
ii. Firewall
iii. Multicast
iv. Hybrid topology
v. Protocol stack (10mks)

(b) Distinguish between

i. parallel and serial transmissions
ii. Peer-to-peer and client-server networks (4mks)

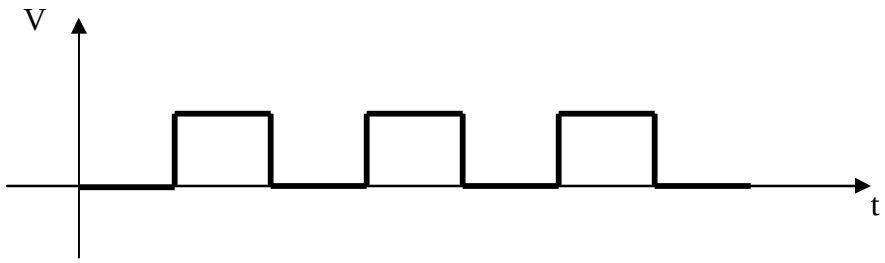
(c) Define the functions of the following components of LAN

i. Routers
ii. NICs
iii. Bridges
iv. Switches (8mks)

(d)Differentiate between message switching and packet switching modes (3mks)

(e) Why does a gateway belong to all the seven layers of OSI? Explain the function of a gateway. (1mks)

(f) Show by sketching and explaining how a MODEM can covert the digital signal below to an analog signal (4mks)



QUESTION TWO (20 MARKS) ELECTIVE

(a) Define bandwidth (3mks)

(b) What is multiplexing? Describe how multiplexing is achieved (6mks)

(c) Differentiate between synchronous and asynchronous data transmission modes (5mks)

(d) Discuss point to point and broadcast transmissions (6mks)

QUESTION THREE (20 MARKS) ELECTIVE

(a) What is Local Area Network (LAN)? (2mks)

(b) Differentiate between private branch exchange and public exchange systems (2mks)

(c) Explain **five** advantages and **five** disadvantages of LAN (10mks)

(d) Describe MAN and WAN networks (6mks)

QUESTION FOUR (20 MARKS) ELECTIVE

(a) Explain the terms baud, frequency, amplitude and through put (8mks)

(b) The line below is a message sent over a network:

A network or communications network is a system of interconnected computers, telephones lines or other communication devices to communicate and share application.

if the message takes 2 milliseconds to be transmitted over the network, determine

i. the transfer rate in bps (4mks)
ii. baud in kbps (3mks)

(c) Determine the time taken to download a 14kB document by a 33k modem if the system has a system delay of 2 seconds (5mks)

QUESTION FIVE (20 MARKS) ELECTIVE

(a) What is network protocol stack? Give an example of a protocol stack (3mks)

(b) Differentiate between TCP and IP protocols (3mks)

(c) Explain **three** functions of TCP protocol (6mks)

(d) Write in full the names and state the functions of the following protocols

i. SMTP
ii. HTTP
iii. FTP
iv. UDP (8mks)