TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR DEGREE IN:
BACHELOR OF TECHNOLOGY IN INFORMATION TECHNOLOGY
(BTIT Y4 S2-FT&EV)

EIT 4421: HIGH PERFORMANCE COMMUNICATION NETWORK

END OF SEMESTER EXAMINATION
SERIES: DECEMBER 2014
TIME: 2 HOURS

Instructions to Candidates:
You should have the following for this examination
- *Answer Booklet*

This paper consists of **FIVE** questions. Attempt question **ONE (Compulsory)** and any other **TWO** questions
Maximum marks for each part of a question are as shown
This paper consists of **TWO** printed pages

Question One (Compulsory)

a) Explain the following terms:
(i) High Performance Network
(ii) Mutli-core Processing
(iii) Allow Size
(iv) Jitter **(8 marks)**

b) Briefly explain the main requirements of high performance communication networks **(6 marks)**

c) Describe the Hyper-Cube technique used to interconnect High Performance Network nodes **(2 marks)**

d) A High Performance Core Network has 26 notes. The nodes are interconnected using the Hyper-cube technique. Derive the topological diagram of this network. **(4 marks)**

e) Describe the layered architecture of a High Speed Network and outline the services provided by each layer. **(10 marks)**

Question Two

a) Using a labeled diagram, describe how communication takes place between a web client and a web server **(5 marks)**

b) Describe any FIVE characterization of communication network traffic **(5 marks)**

c) Explain the importance of characterization of communication network traffic **(10 marks)**

Question Three

a) Define the terms:
   (i) Servent
   (ii) Cell as use in ATM technology **(4 marks)**

b) Outline any SIX features of a P2P network **(6 marks)**

c) Briefly, describe the ATM protocol architecture **(10 marks)**

Question Four

a) Explain the term over-clocking as applied to a computer **(2 marks)**

b) Discuss TWO effects of over-clocking a computer system **(2 marks)**

c) Using a suitable diagram or otherwise, distinguish between ATM link, ATM Virtual Circuit and ATM Virtual Path **(6 marks)**

d) Discuss the following grades of service provided by the ATM Networks:
   (i) Constant Bit Rate (CBR)
   (ii) Variable Bit Rate (VBR) **(6 marks)**

e) State TWO application areas where each one of the ATM grade of services in question 4(d) are used. **(4 marks)**

Question Five

a) Distinguish between Active and Passive Network traffic measurement tools **(4 marks)**

b) Explain the significance of pipelining technique in high performance computing systems **(4 marks)**

c) The pipeline depth of a High Performance processing system is four. Determine the number of instructions a Processor in this system can execute in twelve CPU cycles **(4 marks)**

d) Outline any FOUR applications of Network Traffic Measuring tools **(4 marks)**

e) Discuss any TWO techniques used in design of network performance studies **(4 marks)**