



# MURANG'A UNIVERSITY COLLEGE

(A Constituent College of Jomo Kenyatta University of Agriculture and Technology)

University Examinations 2015/2016 Academic Year

SCHOOL OF BUSINESS AND ECONOMICS

SPECIAL/SUPPLEMENTARY SEMESTER EXAMINATION FOR THE DEGREE OF  
BACHELOR OF BUSINESS INFORMATION TECHNOLOGY

HBT 2105: COMPUTER NETWORKS AND DATA COMMUNICATIONS

TIME 2 HOURS

MAIN CAMPUS

DATE 27<sup>TH</sup> OCTOBER 2015

TIME:2HOURS

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*Instructions: Answer Question 1 and Any Other Two.*

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## Question 1

- a) Define the following terms:
  - i) Flow control
  - ii) Error control
  - iii) IP address
  - iv) Sliding window method (6 marks)
- b) Given a channel with an intended capacity of 32 Mbps, the bandwidth of the channel is 4 MHz. What SNR in db is required to achieve this capacity. (4 marks)
- c) Briefly explain the purpose of ATM (Asynchronous Transmission Mode) and Frame relay technologies in wide area networks. (6 marks)
- d) Differentiate between the terms Baud Rate and Transmission Rate as used in data communication (4 marks)
- e) Compare applications of parallel and serial data transmission methodologies (4 marks) f) Briefly discuss the suitability of Ethernet and Token Ring technologies for a lightly loaded network or a heavily loaded network. (6 marks)

## Question 2

- a) Explain two major data transmission impairments (4 marks)
- b) Discuss how the problems in (a) above have been reduced in copper, optic fiber and microwave media (8 marks)
- c) b) Draw and explain the block diagram of fiber optic communication. State two light sources and two light detectors. (8 marks)

### **Question 3**

- a) Briefly explain the role of the four successive layers of the TCP/IP network model (10 marks)
- b) Explain about the following statement, "TCP is connection-oriented, IP is connectionless". (4 marks)
- c) How does encapsulation contribute to error free transmission of data between application programs in the source and the destination computer? (6 marks)

### **Question 4**

- a) What is a router? Give four reasons why a router is appropriate in connecting a College LAN to the internet. (10 marks)
- b) Explain what a client/server network model is and demonstrate how the concept applies to an end user of email and browsing internet services. (10 marks)