



MURANG'A UNIVERSITY COLLEGE

University Examinations 2015/2016

**THIRD YEAR SEMESTER I EXAMINATION FOR THE DEGREE OF BACHELOR OF
SCIENCE IN MATHEMATICS AND COMPUTER SCIENCE**

ICS 2306: COMPUTER NETWORKS

DATE: 18TH APRIL 2016

TIME: 2HRS

Instructions: Answer Question 1 and Any Other Two.

Question 1: (30 Marks)

- a) Describe the components of communication system according to Shannon [6marks]
- b) Describe the relationship between data rate and bandwidth [2marks]
- c) Discuss the following terms as used in computer networks.
- i. Attenuation
 - ii. Protocol
 - iii. Client
 - iv. Server [8marks]
- d) Discuss any FIVE aspects that one needs to consider before designing a network for a given organization [10marks].
- e) Explain the relationship between the terms interconnectivity, interoperability and internetworking [4marks]

Question 2 (20 marks)

- a) Describe the orientation of the three basic network connecting strategies [6 marks]
- b) With help of a diagram Explain the seven layers of the OSI reference model stating component that are active at each layer [14marks]

Question 3 (20 marks)

- a) Discuss the access methods for each of the three basic network topologies [6marks]
- b) Discuss any **three** benefits of a network [6marks]
- c) A client seeking advice from you wants to know on what basis does he select a transmission medium. Provide him a list of five items to consider [8marks]

Question 4 (20 marks)

- a) The fiber optic cable is now the proffered medium for real time communication, discuss reason why [6marks]
- b) Differentiate between the following networking interface device
 - i. RJ 45 and RJ 11
 - ii. 50 OHM terminator and T Connector
 - iii. BNC and vampire tap [6marks]
- c) Explain any three expansion buses/ slots that may be use to mount NIC [6marks]
- d) A repeater is not just an amplifier, qualify this statement [2marks]