(Knowledge for Development)

KIBABII UNIVERSITY COLLEGE
A CONSTITUENT COLLEGE OF
MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY

UNIVERSITY EXAMINATIONS

2014/2015 ACADEMIC YEAR

THIRD YEAR SECOND SEMESTER
MAIN EXAMINATION

FOR THE DEGREE OF

BACHELOR OFCOMMERCE

COURSE CODE: BCO 365 E

COURSE TITLE: DATA COMMUNICATIONS

DATE: 29th APRIL, 2015   **TIME:** 11.30AM-1.30PM

INSTRUCTIONS TO CANDIDATES
Answer Question One in Section A and Any other TWO (2) Questions in Section B

TIME: 2 Hours

SECTION A
ANSWER ALL QUESTIONS FROM THIS SECTION (30MARKS)

1) **Question One (30mks)**
   a) Differentiate between the following terminologies as used in data communications.
      i) Data Communications and Computer Networks
         (2mks)
      ii) Point-to-point and Multipoint
         (2mks)
      iii) A Protocol and a Standard
         (2mks)

   b) The effectiveness of a data communications system depends on four fundamental characteristics. Describe these fundamental characteristics.
      (8mks)
   c) Identify and briefly explain the five components of a data communications system.
      (5mks)
   d) In data communications and networks information is represented in different forms. Outline any two forms used today.
      (1mk)
   e) There are different modes of transmission or data flow in data communication system. What is the difference between half-duplex and full-duplex transmission modes?
      (4mks)
   f) A network must be able to meet a certain number of criteria. What are the three most important criteria necessary for an effective and efficient network?
      (6mks)

SECTION B
ANSWER ANY <u>TWO</u> QUESTIONS FROM THIS SECTION (40 MARKS)
(All questions carry equal marks)

2) **Question Two**
   a) What is the main reason as to why the Open Systems Interconnection (OSI) reference model was created by International Organization for Standardization (ISO)? Why does the model break this approach into layers?
      (3mks)
   b) A reference model is a conceptual blueprint of how communications should take place. Outline three advantages of the reference model.
      (3mks)

c) The network devices in an internetwork operate at all the seven (7) layers of the Open Systems Interconnection (OSI) reference model. Using a well labelled figure depicting the layers, describe the functions of each of the layer in the model.
(14mks)

3) **Question Three:**

a) Define Network Media?
(2mks)

b) Network connectivity requires media to facilitate data transmission. Briefly describe any FOUR data transmission media you are familiar with.
(8mks)

c) Modern technology has made it possible to achieve data communications without using any cables but using unguided media technology. Briefly explain any FOUR of the available wireless communication options available today.
(8mks)

d) Wireless networks are much more susceptible to unauthorized use than cabled networks. Wireless network devices use radio waves to communicate with each other. What are some of the disadvantages of these wireless networks?
(4mks)

4) **Question Five**

a) Define the following protocols as used in the internetworking models.
(4mks)
  i. TCP
  ii. UDP
  iii. ARP
  iv. ICMP

b) The TCP/IP (DOD model) model it is a condensed version of the OSI model composed of four layers. Using a suitable diagram explain the layers and how the TCP/IP stack maps on the OSI model.   (8mks)

c) Each layer of the DOD model has a couple of protocols associated to each. Discuss at least TWO protocols on each layer of the TCP/IP stack.
(8mks)

5) **Question Five**

a) Role of system/network administration is key in setup especially in the provision of enterprise wide services. Describe the any FOUR major roles of a Network and Systems

Administrator in any Organization/institution.

       (4mks)

b) What are the main causes of Network connectivity problems at the Physical, Data link, and Network layers of the OSI model worthy troubleshooting?

       (8mks)

c) Describe each of the following terms as used in network administration & management:

       (8mks)

   i.   Network Configuration management

   ii.   Network Fault management

   iii.   Network Performance management

   iv.   Network Security management