TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY
(DICT 14J-Y2S1)

EIT 2201: DATA COMMUNICATION

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

<u>**Instructions to Candidates:**</u>
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
<u>Maximum marks for each part of a question are as shown</u>

Question One (Compulsory)

a) Differentiate between Networking and Data Communication. **(2 marks)**

b) List at least THREE factors that cause transmission media impairment. **(3 marks)**

c) How does multiplexing improve data movement and communication? **(3 marks)**

d) List TWO advantages and TWO disadvantages of the following topologies:
  (i) Star Topology
  (ii) Ring Topology
  (iii) Mesh Topology
  (iv) Hybrid Topology **(8 marks)**

e) Describe the unique differences between Analog and digital signals. **(4 marks)**

Question Two

a) Explain the following:
  (i) Simplex
  (ii) Half duplex
  (iii) Full duplex **(6 marks)**

b) What is the difference between parallel and serial communication. **(3 marks)**

c) How does quality of service affect the performance of any communication system. **(3 marks)**

d) Using suitable examples explain how geographical features such as Hills, can be an impediment to wired networks. **(3 marks)**

e) What are the advantages of using optical fiber. **(3 marks)**

f) What is frequency modulation? **(2 marks)**

Question Three

a) Using a detailed diagram, illustrated the layers as outlined on the OSI model and their functions, types of equipment operating in each and protocols. **(10 marks)**

b) List THREE advantages and TWO disadvantages of implementing client/server computing over a workgroup implementation. **(10 marks)**

Question Four

a) What are the functions of the following Network equipment:
  (i) Server
  (ii) Router
  (iii) Firewall
  (iv) Switch
  (v) Cable tester **(10 marks)**

b) With the aid of suitable diagram, explain the necessary components needed for a communication system to work properly. **(10 marks)**

Question Five

a) Convert the following IP Address to binary:
   (i) 172. 16. 89. 219
   (ii) 86. 97. 112. 67
   (iii) 254. 196. 214. 4
   (iv) 127. 0. 0. 1
   (v) 4. 1. 110. 79 **(10 marks)**

b) Explain FIVE Roles and Functions that are played by a systems administrator and why they are vital for any organization and why they are vital for any organization to have at least one systems administrator. **(10 marks)**