THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

(A Centre of Excellence)

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

DIPLOMA IN INFORMATION TECHNOLOGY
(DIT 2K 10J)

ECS 2309: DATA COMMUNICATION IV

SPECIAL/SUPPLEMENTARY EXAMINATION
SERIES: OCTOBER 2012
TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consist of **FIVE** questions
Answer question **ONE** and any other **TWO** questions
Maximum marks for each part of a question are as shown
This paper consists of **THREE** printed pages

SECTION A (COMPULSORY)

Question One (20 marks)

a) Explain the following:
- **i)** Proxy server
- **ii)** Subnet Mask
- **iii)** Signal Attenuation
- **iv)** DHCP Server **(8 marks)**

b) The table below show IP Adresses:

IP Address	Class	Subnet Mash
129.1.51.48		
192.110.103.22		
122.117.100.21		
200.1.1.1		

For each IP Address in the table state its class and subnet mash. **(4 marks)**

c) Using diagram, show how TCP/IP fits in the ISO-OSI reference model **(4 marks)**

d) Briefly explain the following switching techniques:
- **i)** Packet switching
- **ii)** Circuit switching **(4 marks)**

SECTION B (Answer Any Two Questions)

Question Two (20 marks)

a) Describe any **TWO** function for each of the following TCP/IP layers:
- **i)** Application Layer
- **ii)** Network Access Layer
- **iii)** Internet Layer **(6 marks)**

b) List any one Transport Layer protocol that provides virtual protocol that provides virtual circuit stating how the virtual circuit is identified. **(2 marks)**

c) Differentiate between CSMA/CD and CSMA/CA connection medium access control methods. **(4 marks)**

d) List any **FOUR** examples of Network and DataLink layer protocols that establish virtual circuit and state in each case how the circuit is identified. **(8 marks)**

Question Three (20 marks)

a) State any **TWO** advantages of Asynchronous Transfer Mode (ATM) **(2 marks)**

b) Describe the architecture of ATM cell. **(4 marks)**

c) List any **FOUR** types of proxy services and describe their functions. **(8 marks)**

d) Explain what is meant by 'circumventor'. **(2 marks)**

e) Distinguish between adhoc and structured wireless LAN. **(4 marks)**

Question Four (20 marks)

a) List any **FIVE** functions the Transport Layer of TCP/IP model. **(5 marks)**

b) Briefly describe the **FOUR** protocols that operate at internet layer of TCP/IP model. **(8 marks)**

c) Distinguish between private and public IP Addresses. **(1 mark)**

d) Compare IPV4 & IPV 6 addressing schemes. **(6 marks)**

Question Five (20 marks)

a) Describe how Transmission Control Protocol (TCP) ensures reliable transmission of data. **(9 marks)**

b) Define 'Broadcast Domain' **(2 marks)**

c) Explain 'TCP Ports' **(3 marks)**

d) List **THREE** categories of port numbers together with their range. **(3 marks)**

e) State which device you would use to:

(i) Breach Collision domain into smaller segment.

(ii) Break Broadcast domain into smaller segment

(iii) Boost signals so that a network can be extended. **(3 marks)**