



**THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE**

*Faculty of Engineering & Technology*

**DEPARTMENT OF COMPUTER SCIENCE**

**DIPLOMA IN INFORMATION & COMMUNICATION  
TECHNOLOGY (DICT)**

**END OF SEMESTER 2010 EXAMINATION**

**APRIL/MAY 2010 SERIES**

**DATA COMMUNICATION & NETWORKING**

**TIME: 2 hours**

**INSTRUCTIONS TO CANDIDATES**

Question **ONE** is **COMPULSORY**.

Answer any other **TWO** Questions from **Section B**.

## **SECTION A**

### **Question ONE (COMPULSORY)**

- (a). Compare bus and star topologies under the following topics:
- (i). Data communication
  - (ii). Scalability
  - (iii). Cost
- (6 Marks)**
- (b). With the aid of a diagram show the construction of optical fiber cable and explain its pros and cons. **(9 Marks)**
- (c). State the limitations of microwave satellite communication. **(5 Marks)**
- (d). Define the following:
- (i). Full duplex
  - (ii). Synchronization
  - (iii). Data circuit terminating equipment
  - (iv). A synchronization
  - (v). Broadband transmission
- (10 Marks)**

## **SECTION B (ANSWER ANY TWO QUESTIONS)**

### **Question TWO**

- (a). Explain **FIVE** roles of communication protocols. **(5 marks)**
- (b). State the roles of the following protocols;
- (i). TCP
  - (ii). HTTP
  - (iii). IP
  - (iv). DHCP
- (8 marks)**
- (c). Explain the functions of the following servers:
- (i). Application server
  - (ii). File and Print Server
- (3 Marks)**
- (d). State the **FOUR** importance of layering the ISO-OSI reference model. **(4 Marks)**

### **Question THREE**

- (a). Differentiate between the following terms:
- (i). Modulation and demodulation
  - (ii). Based band and broadband transmission
  - (iii). Serial and parallel transmission
- (b). Compare amplitude and frequency modulation with regard to there processes and limitations. **(6 Marks)**
- (c). Differentiate between bounded and unbounded media. **(3 Marks)**
- (d). With the aid of a diagram show the construction of a coaxial cable and explain the function of each part. **(5 Marks)**

### **Question FOUR**

- (a). Explain the operation of the FDDI network. **(6 Marks)**
- (b). Distinguish between the following;
- (i). Circuit switching and packet switching
  - (ii). Bridge and router
- (4 Marks)**
- (c). Explain any **FOUR** roles of network administer. **(4 Marks)**
- (d). Compare server based and peer-to-peer networks under the following topics:
- (i). Number of users
  - (ii). Security
  - (iii). Administration
- (6 Marks)**

### **Question FIVE**

- (a). A college intends to install a network based on 10 base 2 Ethernet standards.
- (i). Draw the diagram of the network layout. **(2 marks)**

- (ii). List **FOUR** components other than the computer that would be required for the successful installation of the network. **(4 Marks)**
- (b). With the aid of diagrams show how then token ring network can be implemented as a physical star, logical ring using a multistation access unit. **(4 Marks)**
- (c). Explain the following transmission impairments:
- (i). Crosstalk
  - (ii). Attenuation
  - (iii). Thermal Noise
  - (iv). White Noise

**(8 Marks)**