



## **GARISSA UNIVERSITY COLLEGE**

*(A Constituent College of Moi University)*

**UNIVERSITY EXAMINATION 2016/2017 ACADEMIC YEAR ONE  
SECOND SEMESTER EXAMINATION**

**SUPPLEMENTARY/SPECIAL EXAMINATION**

**SCHOOL OF INFORMATION SCIENCE**

**FOR THE DIPLOMA INFORMATION TECHNOLOGY**

**COURSE CODE: DIT 004**

**COURSE TITLE: DATA COMMUNICATION**

**EXAMINATION DURATION: 3 HOURS**

**DATE: 27/09/17**

**TIME: 09.00-12.00 PM**

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### **INSTRUCTION TO CANDIDATES**

- **The examination has SIX (6) questions**
- **Question ONE (1) is COMPULSORY**
- **Choose any other THREE (3) questions from the remaining FIVE (5) questions**
- **Use sketch diagrams to illustrate your answer whenever necessary**
- **Do not carry mobile phones or any other written materials in examination room**
- **Do not write on this paper**

**This paper consists of THREE (3) printed pages**

*Supplementary / special exam\_*

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***please turn over***

*Good Luck – Exams Office*



## QUESTION ONE (COMPULSORY)

- (a) Define the following terms as used data communication
- i. Modulation [2 marks]
  - ii. Protocol [2 marks]
  - iii. Encryption [2 marks]
  - iv. Authenticity [2 marks]
  - v. Redundancy [2 marks]
- (b) Using a well-labeled diagram, explain how **fiber optic cable** transmits data. [5 marks]
- (c) Outline five devices that are used during network implementation [5 marks]
- (d) Describe five ways in which errors can be prevented in data communication [5 marks]

## QUESTION TWO

- (a) There are three main types of network topologies namely; star, ring and bus. As a network administrator, you have been asked to produce a briefing document that discusses each topology in terms of cabling cost, fault tolerance, data redundancy and performance as the number of nodes increases. [12 marks]
- (b) Explain three sources of noise in computer networks [3 marks]

## QUESTION THREE

- (a) There is a global trend towards adopting digital communication as opposed to analogue systems. Analogue data has therefore to be converted to digital data in a process known as digitization. Explain four advantages of digital data [8 marks]
- (b) With an aid of a diagram explain the following multiplexing techniques
- i. Time division multiplexing [4 marks]
  - ii. Frequency division multiplexing [3 marks]



#### QUESTION FOUR

- (a) Jane is a lecturer at Garissa University and intends to buy a book from one of online bookstore for her research. Explain the logical data communication processes that will occur from the time She places an order online to the time it is received by the bookstore if the network uses TCP/IP protocol model **[9 marks]**
- (b) Using a diagram show how the data bits 010011 will be encoded to data signals if the encoding technique is
- i. Unipolar NRZ **[2 marks]**
  - ii. Bi phase Manchester **[2 marks]**
  - iii. Differential Manchester **[2 marks]**

#### QUESTION FIVE

Discuss the following emerging technologies and their impacts in an organization

- i. Cloud computing **[5 marks]**
- ii. Mobile computing **[5 marks]**
- iii. Video conferencing **[5 marks]**

#### QUESTION SIX

- (a) Explain four types of attacks in wireless networks and the strategies the organization can adopted to protect its data asset from these attacks **[8 marks]**
- (b) Discuss the following switching techniques **[7 marks]**
- i. Circuit switching
  - ii. Packet switching

