**NAIROBI INSTITUTE OF BUSINESS STUDIES**

**DEPARTMENT OF COMPUTER SCIENCES**

**DIPLOMA IN INFORMATION TECHNOLOGY (KNEC)**

**END TERM EXAMINATION– MARCH 2015**

**TIME ALLOWED: 3 HOURS**

**DATA COMMUNICATION AND NETWORKING**

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| **INSTRUCTIONS:**1. Answer all the **FIVE** questions.
2. Time allowed is **3hrs.**
3. Each question carry’s equal marks.
4. Mobile phones should be switched off.
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**Question 1**

1. For each of the following IP class, identify an appropriate IP address;
2. Class A
3. Class B
4. Class C (6 marks)
5. Outline **one**  characteristic of each of the following data communication modes:
6. Simplex mode
7. Half-duplex mode (4marks)
8. Explain **three** factors that led to the emergence of OSI reference model. (5 marks)

**Question 2**

1. The human voice contains frequencies from 0-4000Hz, assuming 8 bits per sample, calculate:
2. The sampling rate based on Nyquist theorem (3 marks)
3. Bit rate (3 marks)

1. Explain **TWO** services offered by the session layer of the OSI reference model (4 marks)
2. Matumbo Technical College intends to install **Internet** that will be used by student.
3. Outline **four** benefits that the college could realize. (4 marks)
4. Explain **two** challenges that the college would face in the long run. (1 marks)

**Question 3**

1. With an aid of a diagram, describe the **hybrid** topology (4 marks)
2. Explain **three** aspects of a sine wave. (3 marks)
3. Julie intends to select a transmission medium for a network design. Outline **four** other factors that she could consider other than cost. (4 marks)
4. Outline **four** types of IEEE Ethernet standards (4 marks)

**Question 4**

1. Explain **five** reasons why digital transmission is preferred over analog transmission. (5marks)
2. Define **three** roles for computer networks in organization. (3 marks)
3. Outline **three** data transmission impairments (6 marks)
4. What is meant by the term ***signal*** in data communication? (1 mark)

**Question 5**

1. State the use of each of the following Ethernet Cables:
	1. 10BaseT
	2. 10Base5 (4marks)
2. Identify **three** situations where the use of satellite transmission would be preferred over guided media. (3 marks)
3. Figure 1 shows a TCP/IP model, outline on function of each of the layers labeled (4), (3), (2) and (1). (8 marks)

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| Layer 4 |
| Layer 3 |
| Layer 2 |
| Layer 1 |