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**KENYA METHODIST UNIVERSITY**

**END OF FIRST TRIMESTER 2018 (PT) EXAMINATIONS**

**SCHOOL : SCIENCE AND TECHNOLOGY**

**DEPARTMENT : COMPUTER SCIENCE**

**COURSE CODE : BBIT 242 /CISY 231**

**COURSE TITLE : TELECOMMUNICATION NETWORKS**

**TIME : 2 HOURS**

**INSTRUCTIONS:**

* ***Answer Question ONE and any other TWO Questions.***

**Question One**

1. Describe the following type of connections: (6 Marks)
2. Simplex
3. Half-duplex
4. Full-duplex
5. Name two error correction techniques. (2 Marks)
6. Differentiate synchronous and asynchronous transmission, citing where each is used (4 Marks)
7. Describe four components found in the communication model. (4 Marks)
8. Which are the three techniques for switching messages through complex networks? (3 Marks)
9. Differentiate between the checksum error detection technique and the CRC error detection technique. (4 Marks)
10. Describe TWO disadvantages of parallel transmission (2 Marks)
11. State and briefly describe any three sources of errors in telecommunication networks. (3 Marks)
12. Distinguish between forward error correction and backward error correction (2 Marks)

**Question Two**

1. Why is synchronous transmission referred to as block by block transmission? Briefly describe how this transmission method works.

(4 Marks)

1. Briefly describe the three techniques for encoding digital data on digital carrier signal. (7 Marks)
2. What is the advantage of multiplexing (2 Marks)
3. Differentiate between absolute bandwidth and effective bandwidth

(2 Marks)

**Question Three**

1. Which type of compression is used to define the GSM standard used in voice transmission? Briefly describe how this compression technique works. (4 Marks)
2. List THREE key differences between frame relay and x.25 (6 Marks)
3. Describe predictive encoding and name standard defined by it (5 Marks)

**Question Four**

1. Compression aims to achieve various aims in multimedia. Describe the following compression methods and how you use each to compress the string given in brackets. (8 Marks)

Huffman coding (DDDDDDDWWWWWWWWEEEEEEEEEEAAA).

Run length encoding (000001000000001000)

1. Distinguish between lossy and lossless compression techniques, giving an example in each case. (4 Marks)
2. Outline two advantages and one disadvantage of using fiber optic transmission medium (3 Marks)