



TECHNICAL UNIVERSITY OF MOMBASA
INSTITUTE OF COMPUTING AND INFORMATICS

Select department

UNIVERSITY EXAMINATION FOR:

BTIT/SEP2015/J-FT

BSSC/SEP2015/J-FT

EIT 4303: DATA COMMUNICATION

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: SEPTEMBER 2018

TIME: 2 HOURS

DATE: Pick Date Sep 2018

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

Question ONE

- (a) Define data communication (2 Marks)
- (b) (i) Describe multiplexing as applied in data communication (1 Mark)
(ii) Compare Time Division Multiple Access to Frequency Division Multiple Access with the aid of a sketch (4 Marks)
- (c) (i) Define switching as applied in Data Communication (1 Mark)
(ii) Describe LAN switching (4 Marks)
- (d) Distinguish between a packet and a frame (2 Marks)
- (e) Describe how TCP over MPLS works (2 Marks)
- (f) Distinguish between static and dynamic IP addressing (2 Marks)
- (g) Distinguish between wi-fi and Wimax (2 Marks)
- (h) Compare Coaxial cable to Twisted Pair cable (4 Marks)
- (i) Define Modulation as applied in Data communication (2 Marks)
- (j) Compare and contrast Amplitude Shift Keying to Amplitude Modulation with the aid of a sketch (4 Marks)

Question TWO

- (a) Describe any FIVE commonly used UTP cable categories in data communication (5 Marks)
- (b) Describe how voice digitization is done with the aid of a sketch
 - (i) Using Delta modulation (5 Marks)
 - (ii) Pulse Code Modulation PCM (10 Marks)

THREE

- (a) A value added networking company wishes to invest in a digital network for future applications; however the company is worried that she may lose royal clients who are still in the analogue generation. The management decides to have a hybrid network that has forward as well as backward compatibility. REQUIRED

Discuss the following Multiplexing techniques that will cater for all envisaged scenarios

- (i) Frequency Division Multiplexing (3 Marks)
- (ii) Wave Division Multiplexing (3 Marks)
- (iii) Time Division Multiplexing (3 Marks)
- (iv) Asynchronous Time Division Multiplexing (3 Marks)
- (v) Code Division Multiplexing (4 Marks)
- (vi) Orthogonal Division Multiplexing (4 Marks)

Question FOUR

- (a) Discuss security issues that are worrying in data communication and propose remedies for the issues (10 Marks)
- (b) Explain the following concepts as applied in wireless data communication
 - (i) CDMA
 - (ii) GSM
 - (iii) TDMA
 - (iv) GPRS
 - (v) EDGE (10 Marks)

Question FIVE

- (a) A Telecommunication company that deal with end to end data communication has approached you to advice on the most cost effective and reliable approaches that they can device to ensure customer satisfaction; REQUIRED

Discuss the following schemes and techniques that you would want them to consider in order to ensure that the company attains her objectives with the aid of a sketch

- (i) Message Switching (4 Marks)
- (ii) Packet Switching (8 Marks)
- (iii) Circuit Switching (8 Marks)