GARY MAGADZIRE SCHOOL OF NATURAL SCIENCES

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

BACHELOR OF SCIENCE HONOURS IN COMPUTER SCIENCE

LEVEL 4 SEMESTER 2

MODULE CODE : **HSC415**

MODULE NARRATION: **ADVANCED DATA COMMUNICATION**

DATE :

DURATION : **3HOURS**

INSTRUCTIONS TO CANDIDATES:

Candidates must attempt **ALL** questions

Question 1

i. Name two well-known data transport protocols provided by the Internet Transport Layer Provide a brief description of each service and indicate what type of application might use that service

ii. Describe the token bucket mechanism for congestion control With which other technique is token bucket usually combined to achieve complete ow control
What problems in the simpler approach are addressed by using a token bucket mechanism

iii. For three marks each define the following general terms used when discussing protocols

a. Peers

b. IDU

c. SDU

d. PDU

Question 2

i. Give an overview of the distance vector method of updating routing table information In particular explain using an example how information about a node failure propagates using this algorithm What problem is encountered in deciding whether a host has become unreachable
In what circumstances is it impossible to resolve this problem ? [16]

ii. Provide the formal definition of a Petri-Net and describe each of the variables /operators in the entries in the tuple [4]

Question 3

Explain the following terms

i. Attenuation
ii. Multiplexing
iii. Phase Modulation
iv. Analog and Digital signals [20]