NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF APPLIED SCIENCE
COMPUTER SCIENCE DEPARTMENT
AUGUST EXAMINATIONS 2009

SUBJECT: COMPUTER DATA COMMUNICATIONS

CODE: SCS2101

INSTRUCTION TO CANDIDATES

This question paper consists of seven[7]questions
Answer any **five** questions

Time: 3 hours

QUESTION ONE

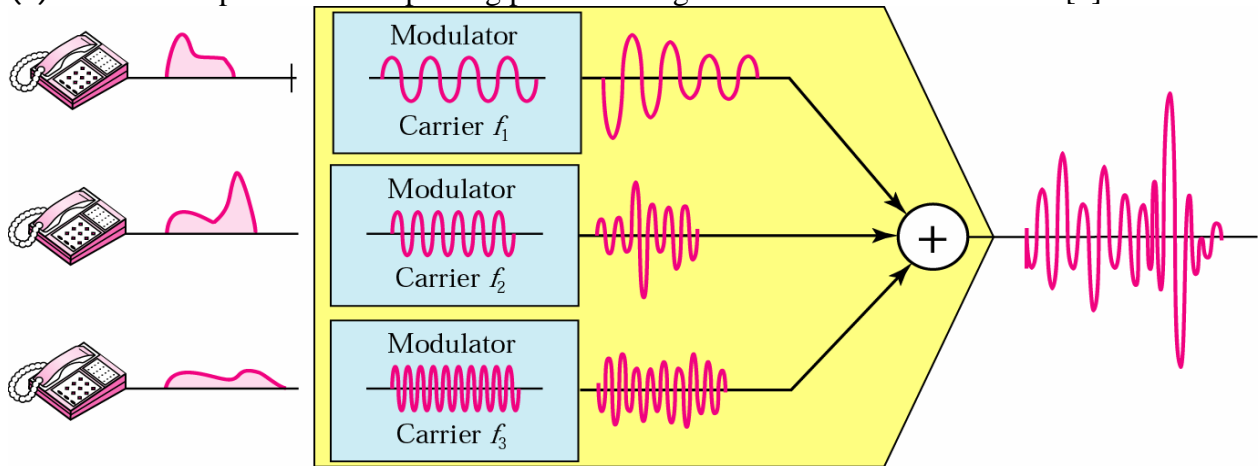(a)Name and explain the multiplexing process in Figure 1   [5]

Figure 1:Multiplexing process

b)   The Advanced Mobile Phone systems(AMPS) uses two bands.The first band ,824
        to 849 MHz,is used for sending; and 869 to 894 MHz is used for receiving.Each
        user has a bandwidth of 30KHz in each direction.The 3-KHz voice is modulated
        using FM,creating 30KHz of Modulated signal.How many people can use their
        cellular phones simultaneously   [6]
c)   Using diagrams,explain the following switching techniques
        (i)Circuit switching   [3]
        (ii)Packet Switching   [3]
        (iii) Message switching   [3]

QUESTION TWO

a) Outline the duties of the networking layer [9]

b) Distinguish between a network address and a netid [2]

c) Using examples illustrate how the following transmission modes are achieved
   i)Simplex [3]
   ii)Half Duplex [3]
   iii)Full duplex [3]

QUESTION THREE

a) In general terms, what application areas are supported by Bluetooth? [3]

b) Briefly explain the Bluetooth usage models [12]

c) With the aid of a diagram explain the relationship between the master and slave in a piconet [5]

QUESTION FOUR

Give an outline of any flow control strategies [20]

QUESTION FIVE

a)Define a MANET [2]

b)What are the characteristics of a MANET [4]

c)Explain the meaning of the following with respect to ad hoc networks

   (i)Routing [2]
   (ii)Routing protocol [2]
   (iii)Table Driven routing protocols [2]
   (iv)Demand driven routing protocol [2]
   (d)Discuss the applications of MANETs [6]

QUESTION SIX

(a) Explain the meaning of VANET. [3]

(b) Why are VANETS relevant to modern society? [5]

(c) Describe any two VANET mobility models. [6]

(d) Compare IPV6 and IPV4. [6]

QUESTION SEVEN

a)Explain the meaning of the following

(i)virus   [2]
(ii)malware   [2]
(iii)worm   [2]
(iv)spyware   [2]
(v)Anti-virus software

b)Explain the attack mechanisms of the following viruses

(i)   Polymorphic   [5]
(ii)   Metamorphic   [5]

END OF QUESTION PAPER