KABARAK   **UNIVERSITY**

UNIVERSITY EXAMINATIONS

2010/2011 ACADEMIC YEAR

FOR THE DEGREE OF BACHELOR OF COMPUTER SCIENCE

COURSE CODE: COMP 312

COURSE TITLE: COMPUTER NETWORKS

STREAM: **SESSION VI &VII**

DAY: **SATURDAY**

TIME   **2.00 – 4.00 P.M**

DATE: **27/11/2010**

INSTRUCTIONS:
1. **This question paper has FIVE questions**
2. **Answer question ONE and any other TWO questions**

PLEASE TURNOVER

QUESTION ONE (30 MARKS) COMPULSORY

   (a) Explain the meaning of following terms
       i.   Firewall
       ii.   Intranet   **(4mks)**

   (b) Distinguish between
       i.   Backup server and domain controller server
       ii.   Interior and exterior router   **(4mks)**

   (c) Perform the following conversions
         i. 168_{10} to base 2
         ii. 1011000101_2 to base 10   **(4mks)**

   (d) Compare and contrast between a hub and a switch   **(6mks)**
   (e) Describe how token passing method of transmission control works   **(5mks)**
   (f)   i.   State Nyquist theorem   **(2mks)**
         ii.   Determine the maximum channel capacity of a 6 kHz channel that has a
             thermal noise of 60dB   **(5mks)**

QUESTION TWO (20 MARKS) ELECTIVE

   (a) Explain how a Shielded Twisted cable is designed to cope up with signal flaws **(3mks)**
   (b) Explain the difference a routing table and a forwarding table   **(4mks)**
   (c) A school wishes to set up a simple network within a computer lab to connect a number of
       computers, a switch and an application server.

         i.   Among UTP, Coaxial and Fibre optic cables, which one would
             recommend for them?   **(1mk)**
         ii. Explain four reasons for your choice   **(4mks)**
         iii. Give four demerits of the cable chosen above   **(4mks)**

   (d) A node that employs ASCII coding system sends out the word *Dec!* over the network.
       Determine the block checksum of the word sent.   **(5mks)**

QUESTION THREE (20 MARKS) ELECTIVE

     (a) Explain the meaning of the term *encoding scheme*   **(2mks)**
     (b) Compare and contrast NRZ and NRZ-I encoding schemes wave formats
                                               (4mks)
     (c) State the encoding rules and limitations for Manchester encoding schemes
                                                 (5mks)
     (d) Determine the input value for the following Differential Manchester encoding
        scheme   V (v)   **(4mks)**
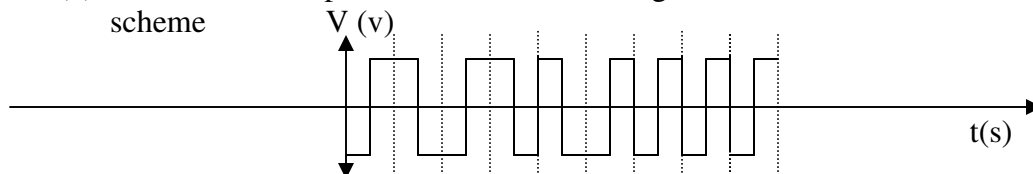
     (e) Plot a Manchester graph for the input value 00101110   **(5mks)**

QUESTION FOUR (20 MARKS) ELECTIVE

   (a) Describe a class C IP address   **(8mks)**

   (b) Differentiate between Network Layer and Transport Layer of the OSI reference model

                                                               (5mks)

   (c) Consider the IP address 192.168.10.255

        i. Distinguish between TCP and IP   **(2mks)**

       ii. Identify the class, Network ID, Host ID and subnet of the address   **(2mks)**

      iii. Explain why it is not advisable to assign this address to a node   **(3mks)**

QUESTION FIVE (20 MARKS)

   (a) Explain the meaning of the following terms

        A token

      i. CRC   **(4mks)**

   (b) Differentiate between 10Base2 and 100Base5 Ethernet standards   **(5mks)**

   (c) Describe a token ring frame format   **(6mks)**

   (d) The table below shows the description of aspects of Ethernet technology. Fill in the table

                                                            (5mks)

Feature	Description
Topology	
Signal Mode	
Access Method	
Specification	
Transfer speed	
Cable type	
Maximum Frame Size	
Media	