**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:**          Y3S1

**DAY:**              TUESDAY

**TIME:**             2.00 – 4.00 P.M.

**DATE:**             22/03/2011

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

**PLEASE TURN OVER**

**QUESTION ONE (30 MARKS)**

(a) Explain the meaning of following terms
  i.    Windowing
  ii.   Decryption                                                        (4mks)

(b) Distinguish between
  i.    Forwarding table and routing table
  ii.   `Exit` and `end` CLIs commands                                    (4mks)

(c) Give four examples of areas where ATM technology is applied          (2mks)
(d) Today's most preferred media type of choice is fibre optic cables.  Give four
    explanations for this                                                 (8mks)
(e) An institution wishes to set up a network of containing a number of devices that include
    access points, switches and many nodes.  The institution has to make a choice between
    cut-through and store-and-forward switches.  Differentiate between cut-through and
    store-and-forward switching modes.                                    (5mks)

(f) A transmitting station A that uses ASCII coding system sends out the message *Bacd!* to
    station B that also uses ASCII coding system.
  i.    Determine the block checksum at station A.                       (5mks)
  ii.   The block checksum obtained in B is 01100010.  Is there an error in transmitting
        the massage?  Explain                                            (2mks)

**QUESTION TWO (20 MARKS) ELECTIVE**

(a) A Manchester encoding system has the same speed as its frequency which makes
    it to be inefficient.  Explain                                       (2mks)
(b) A noiseless medium transmits signals between 43 MHz and 63 MHz frequencies.
    Determine the maximum data capacity the channel can transmit.        (4mks)

(c) The graph below shows a NRZ-I signal of a certain word coded in ASCII
    character coding system.



  i.    Explain the meaning of signal encoding system                   (2mks)
  ii.   Describe the wave format for NRZ-I                               (4mks)
  iii.  Explain one merit and two limitations of NRZ-I over NRZ         (3mks)
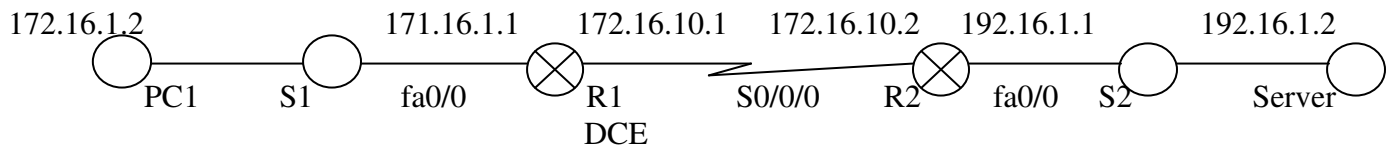  iv.   Determine the binary bit stream for the signal in the graph above  (5mks)

## QUESTION THREE (20 MARKS) ELECTIVE

(a) What is the meaning of the following term *Protocol stack* (2mks)
(b) Differentiate between a DNS and Default gateway (2mks)
(c) Describe layer 4 OSI reference model issues (4mks)
(d) The IP address 11000000.00010101.10101101.11111111 was assigned to a network node by a student.
    i. Give four examples of network nodes (2mks)
    ii. Convert each part of the IP address to a decimal number and write down the full address in dotted decimal value (4mks)
    iii. Identify the network class, network id, host id and correct sub netting of the IP address (4mks)
    iv. Explain why it is not advisable to assign this IP address to a network node (2mks)

## QUESTION FOUR (20 MARKS)

The network topology setup below shows specifications for a certain network. Use it to answer the following questions. The password and secret word for both routers are kabu and trial respectively. The server domain name is class.com

```
172.16.1.2          171.16.1.1    172.16.10.1  172.16.10.2  192.16.1.1        192.16.1.2
    ○        ○       fa0/0  ⊗      S0/0/0    ⊗  fa0/0   ○         ○
    PC1      S1            R1                R2              S2        Server
                          DCE
```

(a) Explain the meaning of the terms *User EXEC* mode and *Privileged EXEC* mode (4mks)
(b) Identify and explain the type of cabling (straight-through or crossover) between R1 and R2 (2mks)
(c) State the configurations that have to be made at PC1 (4mks)
(d) Write CLI for R1 interface configurations (8mks)
(e) Write a CLI loop back test at PC1 to the Server (2mks)

## QUESTION FIVE (20 MARKS) ELECTIVE

(a) What is meant by the following term snooping (2mks)
(b) Among the main three types of network topologies, star is a popular and widely used topology in LANs. Explain five reasons why you think so. (5mks)
(c) FDDI could as well replace Ethernet for fast networks but Ethernet networks are still the favourite network technology. Explain (3mks)
(d) Differentiate between token ring and Ethernet networks (5mks)
(e) One of the threats to network security is risk associated with people. Explain any five risks associated with people that concerns network security (5mks)