

**KABARAK**



**UNIVERSITY**

**EXAMINATIONS**

**2008/2009 ACADEMIC YEAR**

**FOR THE DEGREE OF BACHELOR OF EDUCATION  
SCIENCE**

**COURSE CODE: COMP 312**

**COURSE TITLE: COMPUTER NETWORKS**

**STREAM: SESSION VI & VII**

**DAY: WEDNESDAY**

**TIME: 2.00 – 4.00 P.M.**

**DATE: 08/04/2009**

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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) COMPULSORY

- (a) Explain the meaning of the term windowing (3mks)
- (b) Distinguish between data encryption and data decryption (2mks)
- (c) Explain **three** advantages and **three** disadvantages of twisted fibre optic cables (6mks)
- (d) Differentiate between 10Base2 and 100Base5 Ethernet (5mks)
- (e) Determine the maximum channel capacity of a 9 MHz channel that has a thermal noise of 90dB (4mks)
- (f) Consider the IP address 177.16.177.16.
  - i. Identify the class, network id, host id and correct sub netting (4mks)
  - ii. Convert each part of the IP address to octet binary number (4mks)
  - iii. Explain the reason why it is not advisable to allocate this address to a network node (2mks)

### QUESTION TWO (20 MARKS) ELECTIVE

- (a) Distinguish between
  - i. Dynamic and static routing modes (2mks)
  - ii. Onboard and physical NIC (2mks)
  - iii. Internet and extranet (2mks)
- (b) Explain the functions of an NIC in computer networking (4mks)
- (c) Draw and explain the different component parts of an NIC (10mks)

### QUESTION THREE (20 MARKS) ELECTIVE

- (a) What is encoding scheme and why is it necessary in computer networks (2mks)
- (b) Why do you think token ring technology does not use Manchester encoding scheme? (2mks)
- (c) Compare and contrast Manchester and Differential Manchester encoding schemes wave formats (6mks)
- (d) Plot a Manchester encoding scheme graph for the ASCII extended coding for the two letters *Ba* (10mks)

**QUESTION FOUR (20 MARKS) ELECTIVE**

- (a) What does the 100BaseT Ethernet technology standard mean? (3mks)
- (b) Describe a token ring frame structure (9mks)
- (c) Use Nyquist theorem to determine the maximum capacity a channel can carry if it allows a low-pass signal of 110mHz bandwidth (3mks)
- (d) The table below shows the description of aspects of Ethernet technology. Fill in the table (5mks)

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

**QUESTION FIVE (20 MARKS) ELECTIVE**

- (a) Explain what a protocol stack is giving an example of a protocol stack? (3mks)
- (b) Describe the difference between data link layer and network layer of the OSI reference model (8mks)
- (c) Explain any three functions of a protocol (6mks)
- (d) Determine the ASCII checksum for the word *Cob!* (3mks)