KABARAK UNIVERSITY

UNIVERSITY EXAMINATIONS

2009/2010 ACADEMIC YEAR

FOR THE DEGREE OF BACHELOR OF BUSINESS MANAGEMENT & INFORMATION TECHNOLOGY, BACHELOR OF ENVIRONMENTAL SCIENCE AND TELECOMMUNICATIONS

COURSE CODE: BMIT 217

COURSE TITLE: COMPUTER NETWORKS AND COMMUNICATIONS TECHNOLOGY

STREAM: Y2S1

DAY: WEDNESDAY

TIME: 2.00 – 5.00 P.M.

DATE: 11/08/2010

INSTRUCTIONS:

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

PLEASE TURNOVER

QUESTION ONE (40 MARKS)

(a) Explain the meaning of following terms

i. Optic sensor
ii. DNS
iii. Dedicated circuits
vi. Frame (8mks)

(b) Distinguish between

i. A node and a connectivity device
ii. Extranet and intranet
iii. Monomode and multimode
iv. Token ring and token passing (8mks)

(b) What is the specific remedy to each of the following network security threats?

i. Eavesdropping
ii. Transmission tapping
iii. Snooping (3mks)

(c) Explain *interior*, *exterior* and *border* routers giving an example of each (6mks)

(d) Compare and contrast between a ring and bus network topologies (5mks)

(e) With the aid of a flow chart, describe how CSMA/CD functions (5mks)

(f) A transmitting station A that uses ASCII coding system sends out the message *Face!* To station B that also uses ASCII coding system. Determine the block checksum at station A. (5mks)

QUESTION TWO (30 MARKS)

(a) Distinguish between bits and bytes (2mks)

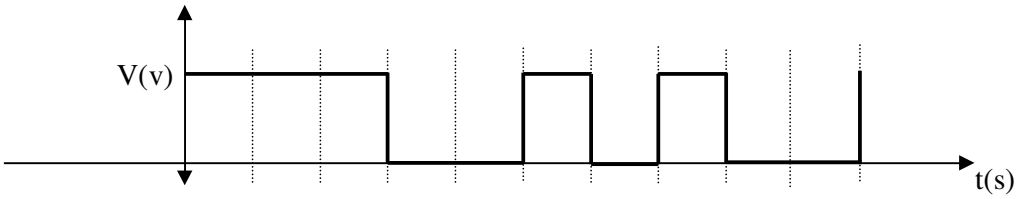
(b) Explain the effect of using each the following mode of transmissions in networks

i. Message switching
ii. Point-to-point
iii. asynchronous
iv. baseband (8mks)

(c) Describe DSL, cable and wireless MODEMs giving at least one advantage and one disadvantage of each (9mks)

(d) A document is supposed to take 0.2 seconds in the absence of system delays, to be downloaded by a 3.4 modem. What is the size of the document in KB if the system has a system delay of 3 seconds? (5mks)

(e) In modulating of signals, a MODEM codes a binary digit 1 as compressions and a binary digit 0 as normal waves. Sketch an analog signal that results from the following digital signal (6mks)



QUESTION THREE (30 MARKS)

(a) State three responsibilities of ICMP protocol (3mks)

(b) Describe a class C Network (5mks)

(c) The IP address 127.168.168.10 was assigned to a network node by a student.

i. Explain the difference between Network ID and Host ID (4mks)
ii. Convert each part of the IP address to octet binary number (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)

(c) For each of these four network issues: PCI, DHCP, FDDI and TDM,

i. Write their names in full (2mks)
ii. Explain their functions in networking (4mks)
iii. State the OSI reference model layer they operate at (2mks)

QUESTION FOUR (30 MARKS)

(a) The NIC belongs to both Physical and Data link layer of the OSI. Explain (4mks)

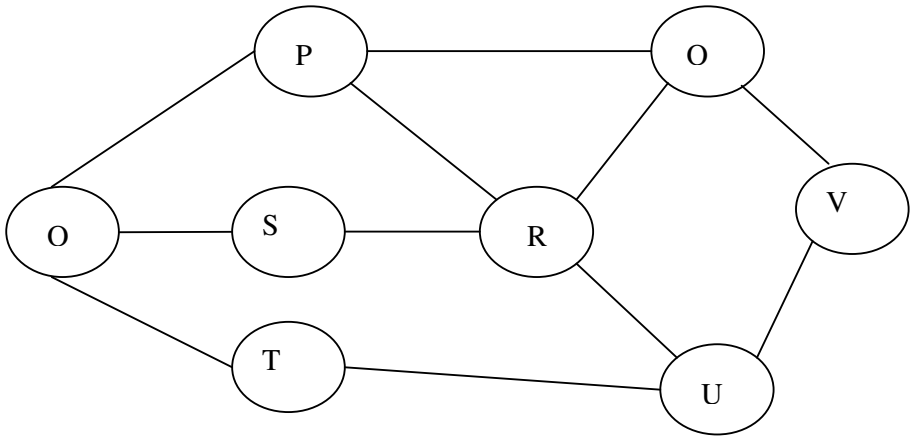
(b) For efficient, largely trouble free network design, the rule "5-4-3" is usually applied. What does each part of the rule mean? (3mks)

(c) Compare and contrast between a hub and a switch (5mks)

(d) 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

i. Differentiate between cut-through and store-and-forward switching modes. (5mks)
ii. Which one do you recommend for the institution? (1mk)
iii. Explain your answer to (d) iii above (2mks)

(e) Assuming that the routers O, P, Q, R, S, T, U and V are in a given network as shown in the diagram below;



i. What is the meaning of the term *routing table*? (2mks)
ii. Explain the difference between *dynamic* and *static* routing (4mks)
iii. Draw a routing table for router S to destination routers U, V, R and T (4mks)

QUESTION FIVE (30 MARKS) ELECTIVE

(a) Describe how a coaxial cable is designed to reduce EMIs and latency (4mks)

(b) Differentiate between a thick coaxial cable and a thin coaxial cable (5mks)

(c) Name the terminators for
i. STP
ii. 10Base2
iii. 100BaseFX
iv. Wireless Medium (4mks)

(d) Suppose you are called upon to set up a network in a large and tight security zone, among twisted pairs, coaxial and fibre optics cables,
i. Which of the three cables would you choose (1mk)
ii. Explain five reasons for your choice (5mks)
iii. Explain five drawbacks of cable chosen above (5mks)

(e) One of the network security risks are risks associated with transmission and hardware. Explain any six risks that are associated with transmission and hardware. (6mks)