KABARAK UNIVERSITY

UNIVERSITY EXAMINATIONS

2009/20010 ACADEMIC YEAR

FOR THE DEGREE OF BACHELOR OF COMPUTER SCIENCE

COURSE CODE: COMP 312

COURSE TITLE: COMPUTER NETWORKS

STREAM: Y3S1

DAY: WEDNESDAY

TIME: 2.00 – 4.00 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 (30 MARKS) COMPULSORY

(a) Explain the meaning of following terms

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

(b) Distinguish between

i. Extranet and intranet
ii. Monomode and multimode (4mks)

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

i. Eavesdropping
ii. IP spoofing
iii. Flashing
iv. Denial-of-service attacks
v. Snooping (5mks)

(c) Compare and contrast between a ring and bus network topologies (4mks)

(d) A noise-free channel can transmit signals at a maximum rate of 10mbps. What is the upper frequency if its lower frequency of transmission is 25MHz? (4mks)

(e) 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 (20 MARKS) ELECTIVE

(a) What is the difference between character coding and signal encoding systems? (2mks)

(b) Compare and NRZ and NRZ-I encoding schemes (4mks)

(c) The word *Deaf* is transmitted over a net that employs ASCII character coding and Manchester encoding scheme.

i. Convert each character in the word into ASCII binary codes. (4mks)
ii. Write down the binary steam of the word if it is to be transmitted (3mks)
iii. Use Manchester encoding system to draw the resulting signal of the word *Deaf* (7mks)

QUESTION THREE (20 MARKS) ELECTIVE

(a) 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 (2mks)
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)

(b) For each of these four network issues: PCI, DHCP, FDDI and MAC,

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)

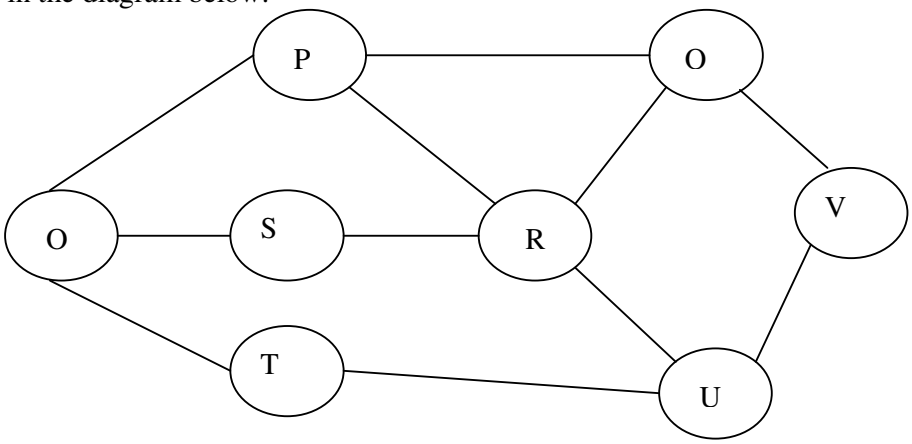
QUESTION FOUR (20 MARKS) ELECTIVE

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

(b) 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 them? Explain (2mk)

(c) 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 (20 MARKS) ELECTIVE

(a) Describe how a coaxial cable is designed to reduce EMIs and latency (5mks)

(b) Name the terminators for

i. STP
ii. 10Base2
iii. 100BaseFX
iv. Wireless Medium (4mks)

(c) 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)