



**FINAL EXAMINATION
SEPTEMBER 2018 SEMESTER**

SUBJECT CODE : CNM640
SUBJECT NAME : NETWORK MANAGEMENT
LEVEL : MASTER'S DEGREE
TIME / DURATION : 9.00 AM - 12.00 NOON
(3 HOURS)
DATE : 6 JANUARY 2019

INSTRUCTIONS TO CANDIDATES

1. Read the instructions given in the question paper CAREFULLY.
2. This question paper is printed on both sides of the paper.
3. This question paper consists of TWO (2) sections, Section A and B.
4. Answer ALL questions in Section A and Section B.
5. Write your answers in the answer booklet provided.
6. Answer all questions in English.

THERE ARE THREE (3) PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 40 marks)**INSTRUCTION: Answer ALL questions.****Please use the answer booklet provided.****Question 1**

Describe the following terminologies related to computer networks.

- a) Ethernet
- b) Transmission Control Protocol/Internet Protocol (TCP/IP)
- c) Firewall
- d) Domain Name System (DNS)

[10 marks]**Question 2**

- a) Assuming that you need to manage a network that contains three different types of devices. In order to avoid dependency on a particular vendor, you have two suppliers for each type of device. Identify and explain which management standards are required to be implemented in this situation.

(4 marks)

- b) If an upgrade in a network is not carefully planned, service outages can occur. Explain **THREE (3)** approaches that make upgrade operations impact network availability.

(6 marks)

[Total: 10 marks]**Question 3**

As modern organizations rely heavily on computing and communication facilities, it is vital to closely monitor and manage the enterprise network in order to ensure it is in peak performance. Using the NMS (network management software) as an example, answer the following questions: -

- a) Explain the importance of having a good Network Management Software.
(3 marks)
- b) Provide **TWO (2)** key features of a Network Management Software.
(2 marks)
- c) Briefly explain the term 'Manager' and 'Agent' from Network Management Software point of view.
(5 marks)

[Total: 10 marks]

Question 4

Using diagrammatic comparison, provide FIVE (5) differences between Open Systems Interconnection (OSI) Reference Model and Transmission Control Protocol/Internet Protocol (TCP/IP) Reference Model.

[10 marks]

SECTION B (Total: 60 marks)

INSTRUCTION: Answer ALL questions.

Please use the answer booklet provided.

Question 1

The International Organization for Standardization (ISO) divided the Network Management into five categories which are **Fault Management, Configuration Management, Accounting Management, Performance Management** and **Security Management**.

Based on the above statement,

- a) Explain the major functions of the **FIVE (5)** categories of Network Management as mentioned above.

(10 marks)
- b) When something goes wrong on a network, up to date documentation could ease the troubleshooting effort. Provide **TWO (2)** types of network documentation and **THREE (3)** examples of information to be incorporated in the documents.

(5 marks)
- c) Discuss how the network management system could assist an IT personnel performing his or her task effectively.

(5 marks)

[Total: 20 marks]

Question 2

Simple Network Management Protocol (SNMP) uses the concept of manager and agent. To do the management tasks, SNMP uses two other protocols which are Structure of Management Information (SMI) and Management Information Base (MIB).

Based on the above statement,

- a) Using an appropriate diagram, explain how the concept of manager and agent is used in SNMP. (4 marks)
- b) Explain the roles of the three protocols namely SNMP, SMI and MIB, in managing the internet. (6 marks)
- c) SNMP uses five basic messages (Get, GetNext, GetResponse, Set and Trap) to communicate between the manager and the agent. With an appropriate diagram, explain the operation of those messages. (10 marks)

[Total: 20 marks]

Question 3

- a) Daniel wishes to open a small business and will operate a Small Office Home Office (SOHO) in a small residential area. He plans to sell some proven and popular air purifiers. He is thinking of using a wireless LAN to connect FIVE (5) PCs and ONE (1) laser printer. Anticipate the problems he would be likely to face. Explain each of the problems and provide suggestions for its solutions. (15 marks)
- b) You are a Network Engineer for your company and your manager claims that he does not need security management functions because he is using a dedicated and secured network management. Do you agree with him? Provide your justification. (5 marks)

[Total: 20 marks]

END OF QUESTION PAPER