



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

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MAIN EXAMINATION

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MAY – AUGUST 2021

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DEPARTMENT OF COMPUTER AND INFORMATION SCIENCE

REGULAR PROGRAMME

CMT 107: COMPUTER NETWORK

Date: AUGUST 2021

Duration: 2 Hours

INSTRUCTIONS: Answer Question ONE and any TWO Questions

Q1. i) Define a the following terms: **(8 marks)**

- a) Protocol
- b) Network
- c) Physical Topology
- d) Logical Topology

ii) Differentiate between TCP/IP and OSI protocols and give the benefits of each. **(8 marks)**

iii) Describe the biggest limitations of bus topology. **(4 marks)**

i) Describe the following network devices and what they do: **(6 marks)**

- a) Switch
- b) Gateway
- c) Repeater

ii) Network Operating systems are said to be multi-user and multi-tasking. Differentiate these two terms. **(4 marks)**

Q2. i) How does a network operating system differ from a standalone operating system? **(6 marks)**

ii) Describe the structure of an IP-address. **(4 marks)**

iii) You have been given an IP address 192.168.1.0 to 192.168.1.128 determine
(4 marks)

- a) Network address
- b) The range of addresses you can assign to individual hosts
- c) Broadcast address
- d) Subnet mask

iv) Contrast between routing, proxy server and IP-Masquerading with respect to routing. **(6 marks)**

Q3. i) What is network security? **(2 marks)**

ii) Describe security compromises that can be performed on data. **(5 marks)**

iii) Explain why it is necessary for an organization to have a network security policy. **(5 marks)**

iv) Explain how a firewall works to enforce a security policy. **(4 marks)**

v) You are network administrator in an organization. How will you know that the network has been intruded? What steps would you take to resolve this problem? **(4 marks)**

Q4. i) Explain three ways of mitigating against risk. **(6 marks)**

ii) Describe the relationship between attack, threat and vulnerability. **(6 marks)**

iii) Why is it important to quantify risk before developing mitigating mechanisms? **(4 marks)**

iv) Differentiate between static IP-addressing and dynamic IP-addressing. **(4 marks)**

Q5. i) What factors will you consider before choosing a network operating system? **(5 marks)**

ii) Describe the role of software in supporting a computer network. **(5 marks)**

iii) Why is it important to do a needs assessment before setting up a computer network. **(5 marks)**

iv) How can a network manager secure a wireless network? **(5 marks)**

END

DET: MAY 2021