



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF INFORMATICS AND INNOVATIVE SYSTEMS
UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN
INFORMATION AND COMMUNICATION TECHNOLOGY
4TH YEAR 1ST SEMESTER 2017/2018 ACADEMIC YEAR
MAIN CAMPUS**

COURSE CODE: ICT 3413

COURSE TITLE: ADVANCED NETWORK MANAGEMENT

EXAM VENUE: LR 13

STREAM: BIS /(ICT)

DATE: 18/12/17

EXAM SESSION: 2.00-4.00PM

TIME: 2.00 HOURS

INSTRUCTIONS

- 1. Answer Question 1 (Compulsory) and ANY other TWO questions**
- 2. Candidates are advised not to write on the question paper**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room**

Question 1 [30 marks]

The Cisco hierarchical (three-layer) internetworking model is an industry wide adopted model for designing a reliable, scalable, and cost-efficient internetwork.

- a) Using a diagram briefly discuss this type of network design (10 marks)
- b) Briefly discuss five benefits of the hierarchical three layered network design. (5 marks)
- c) What is QoS and why is it important (give four reasons)? (5 marks)
- d) Many network problems can be reduced through proper installation and configuration. Multiple hardware and software tools are available to help diagnose, isolate, and resolve issues. Discuss any five tools that may help you to diagnose network problems (10 marks)

Question 2 [20 marks]

- a) Configuration Management (CM) focuses on maintaining up-to-date documentation of a network's configuration. Identify and discuss the five procedures that should be included in configuration management. (5 marks)
- b) Troubleshooting network issues is one of the responsibilities of the network administrator. This is typically in response to a problem report in the form of a trouble ticket. Discuss a structure approach you would use to troubleshoot a network problem. (5 marks)
- c) The ISO and the International Telecommunications Union have defined a formal model for telecommunications and network management. The original model defined five areas of concern, and was sometimes known as FCAPS. Identify the five areas of concern and discuss each in detail. (10 marks)

Question 3 [20 marks]

- a) Understanding Layer 3 protocols and services is critical to troubleshooting many issues. Identify three issues associated with Layer 3 (3 marks)
- b) The inadequate security in SNMP poses several risks and threats. Identify and discuss any four threats associated with this inadequate security in SNMP (8 marks)
- c) Network administrators routinely monitor network resources and review reports to be proactive in their administration. For example, a potential network issue might be averted by spotting a trend such as CPU utilization or

higher bandwidth demand. Identify and discuss four examples of monitoring resources and reports found in Microsoft Windows Server. Use a diagram where necessary.

(9 marks)

Question 4 [20 marks]

a) The commonly used QoS mechanisms fall under six categories. Identify and discuss any five of these.

(10 marks)

b) A fault-tolerant network design is one of the methods used to provide high availability in today's network design. Using a diagram differentiate between a redundant network with a single point of failure and one with no single point of failure.

(5 marks)

c) Identify five design considerations for high availability networks.

(5 marks)

Question 5 [20 marks]

a) The IP Group in SNMP contains three tables. Identify these tables and their functions

(6 marks)

b) Identify and discuss any five scalars in the TCP Group in SNMP

(14 marks)