



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**SCHOOL OF INFORMATICS AND INNOVATIVE SYSTEMS**

**UNIVERSITY EXAMINATION FOR THE BACHELOR OF BUSINESS  
INFORMATION COMMUNICATION TECHNOLOGY**

**4<sup>TH</sup> YEAR 1<sup>ST</sup> SEMESTER 2016/2017 ACADEMIC YEAR**

**2016/2017 ACADEMIC YEAR.**

**MAIN CAMPUS**

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**COURSE CODE: ICT 3413**

**COURSE TITLE: ADVANCE NETWORK MANAGEMENT**

**EXAM VENUE: STREAM: ICT**

**DATE: EXAM SESSION: DECEMBER 2016**

**TIME: 2.00 HOURS**

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**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 ONE – (30 MARKS)**

- a) Describe each of the following terms in reference to advance network management:
- i) Fault Management,
  - ii) Unmanaged Events
  - iii) Managed Events
  - iv) Event Correlation [8 marks]
- b) Discuss three features of Log Management (Syslog) in Network management [6 marks]
- c) The Network Management framework is often divided in five areas (ISO): explain how each is managed.
- i. Configuration Management (connection management and format adaptation)
  - ii. Performance monitoring and management
  - iii. Security management
  - iv. Accounting management (pricing)
  - v. Safety management [10 marks]
- d) Discuss the network management environment must also accommodate management requirements of corporate customers and individual end-users. The OAM&P managing domain includes: [6 marks]

### **QUESTION TWO – (20 MARKS)**

- a) Three basic design layers in concepts to apply in **Network Management Architectural Model**
- i. Network Management Layer (NML) [5 marks]
  - ii. Service Management Layer (SML) [3 marks]
  - iii. Element Management Layer (EML) [4 marks]
- b) Discuss and elaborate on Hierarchical Approach to Network Management [8 marks]

### **QUESTION THREE – (20 MARKS)**

- a) Explain how some of the Network Elements (NE): network components need to be controlled (links, terminals, interfaces, switches, routers, ADMs, OXCs). [4 marks]
- b) A distributed network solution can be necessary both to allow the network to scale to a large number of node and to achieve high performance SONET, Discuss how these will happen in a network management system. [6 marks]

c) Outline and discuss the following in network management. [12marks]

- i. DNS
- ii. Telnet/SSH
- iii. SNMP Polling Standards
- iv. SNMP Community Strings
- v. Network Time Protocol
- vi. Virtual local area network (LAN)

**QUESTION FOUR – (20 MARKS)**

a) The (telco) service providers are converging toward a system called Telecommunication Management Network (TMN) which uses the OSI management protocols (Common Management Information Protocol –CMIP) and object oriented model for databases Describe the OSI Management protocol as used in network management [10 marks]

c) Security management, Control access to network resource and network management are some of the network management implementation ,Identify sensitive information discuss at which network layer it apply in the OSI Layer model. [10 marks]

**QUESTION FIVE – (20 MARKS)**

a) Explain how to alleviate some of the timing issues in the Network Time Protocol (NTP, RFC 1305) and how they should be used in the network, NTP standard [4marks]

b) Network management includes the deployment, integration and coordination of the hardware, software and human elements to test, poll, configure, analyze, evaluate and control the network and element resources to meet the real time, operational and QOS requirements, Discuss [10 marks]

c) Discuss the following networking management concepts [6 marks]

- i. Network monitoring
- ii. Measuring network throughput
- iii. Bottleneck capacity estimation

- iv. Path characterization
- v. Trace route detects the path
- vi. Management Information Base