

**SPECIFY TYPE OF  
EXAMINATION**

**FIRST ATTEMPT**   
**FIRST RESIT**   
**SECOND RESIT**   
**RE-TAKE**



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**SCHOOL OF INFORMATICS & INNOVATIVE SYSTEMS**  
**UNIVERSITY EXAMINATION FOR THE DEGREE OF MASTERS OF**  
**INFORMATION TECHNOLOGY SECURITY AND AUDIT**  
**1<sup>ST</sup> YEAR 2<sup>ND</sup> SEMESTER**  
**2024/2025 ACADEMIC YEAR**  
**KISUMU CAMPUS**

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**COURSE CODE: IIT 5212**

**COURSE TITLE: ADVANCED INFORMATION SYSTEMS CONTROL AND AUDIT**

**VENUE: STREAM:MSc**

**DATE:14/1/25 EXAM SESSION: 9.00-12.00 NOON**

**TIME: 2 HOURS**

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**INSTRUCTIONS:**

- 1) Answer QUESTION ONE (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**
- 4) Mobile phones are NOT allowed in the examination room.**

### **QUESTION ONE (20 MARKS)**

You have been hired as an IS auditor to assess the IT controls of a financial organization.

- a) Discuss four control types that you will consider when carrying out the audit, giving suitable examples of each control type. (10 marks)
- b) Explain in detail five aspects where the audit coverage would change with extensive automation in the organization. (10 marks)

### **QUESTION TWO (20 marks)**

You are leading a team that has been tasked to conduct an IS audit of a retail company's inventory management system.

- a) Outline the audit plan that you would follow for this audit. (14 marks)
- b) One of the tools needed in the audit is a questionnaire to collect data from the employees on various aspects. Discuss the three major aspects that an IS auditor should consider when undertaking the design of a questionnaire to be used during the audit procedure. (6 marks)

### **QUESTION THREE (20 MARKS)**

- a) Discuss any FIVE aspects that you would consider during the review of the Internet Security Administration functions of the e-commerce system put in place by AlphaCo. (10 marks)
- b) Explain FOUR areas where an IS auditor is needed so as to assist a financial auditor during an audit. (8 marks)

### **QUESTION FOUR (20 MARKS)**

- a) Discuss any five aspects that you would consider during the review of the Internet Security Administration functions of the e-commerce system put in place by any organization as an IS auditor. (10 marks)
- b) Discuss the five main phases that an auditor assesses in the process of hardware acquisition. (10 marks)

## **QUESTION FIVE (20 MARKS)**

### Audit of a web application

The system to be audited is a database-driven web application that is available on the Internet. It allows the public to create free accounts, search the review database, submit new votes and reviews on items in the database, and add new items to the database. It also has administrative functionality, so those users who are granted the appropriate rights can perform administrative tasks through the same web interface. We will refer to the application as AuditApp.

The application design and development was a one-man effort, and therefore only this single developer has reviewed the system. This is also this developer's first time using PHP and SQL, which increases the likelihood that potential security holes have made their way into the code. The web application was made available to the public via the Internet with no comprehensive security review. The goal of this audit is to provide an independent security evaluation of the web application.

The application is powered by what is known as a "LAMP" system. This acronym refers to the open source combination of Linux as the operating system, Apache as the web server, MySQL as the backend database server, and PHP, Perl, or Python as the scripting language. In this specific case, the system is running Debian Linux 3.0r2, Apache 1.3.29, MySQL 4.0.17, and PHP 4.2.3. A large web hosting company runs the web and database servers.

The scope of this audit encompasses the web application level of this system: the PHP code itself. It also covers the customer's workflow and interactions with the web hosting server, as potential vulnerabilities could be introduced in that way as well. In addition, it covers any configuration options for the web site that are available to the developer, but not options that are set by the web hosting company that the customer has no control over. The MySQL database, Apache server, and the operating system itself are outside the scope of this audit. The customer has no control over any of these components, as the web hosting company manages these portions of the system. Ideally, these aspects should also be examined in a separate audit.

However, any obvious security issues with the web host's configurations that are discovered during the course of the audit will be reported, as the choice of a web hosting company is still within the developer's control. If it turns out that this web host uses poor security practices, the developer has the option of switching to a company with tighter security.

You are the one contracted to perform the system audit. Answer the following questions.

- a) Clearly, there are many risks that this Web application is likely to face considering the background provided on the developer's skill level and the system itself. You may therefore need to conduct a risk-based audit on the system. Discuss the five components of a risk-based audit. (10 marks)
- b) The likelihood of a control in AuditApp failing is uncertain and therefore will require a risk analysis. Based on the case study on AuditApp, identify and briefly discuss five risk factors. (10 marks)

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