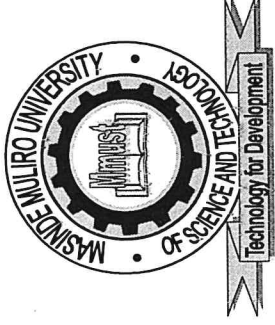


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*(University of Choice)*

**MASINDE MULIRO UNIVERSITY OF  
SCIENCE AND TECHNOLOGY  
(MMUST)**

MAIN CAMPUS

**UNIVERSITY EXAMINATIONS  
2021 / 2022 ACADEMIC YEAR**

**FOURTH YEAR EXAMINATIONS**

FOR THE DEGREE

IN

COMPUTER SCIENCE & INFORMATION TECHNOLOGY

**COURSE CODE: BIT 425E**

**COURSE TITLE: WEB APPLICATIONS SECURITY**

**DATE: 22<sup>ND</sup> APRIL, 2022**

**TIME: 8:00-10:00AM**

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**INSTRUCTIONS TO CANDIDATES**

- Answer Questions ONE and ANY OTHER TWO.  
**TIME: 2 Hours**

### **Question 1 COMPULSORY (30 MARKS)**

- a) Briefly define the following terms in relation to web application security:
- Threat
  - Vulnerability
  - Exploit
  - Risk
  - Impact
- b) The Open Web Application Security Project (OWASP) has identified Top 10 Web Application Security Risks. Name and briefly state each of these risks. **(20 marks)**

**(10 marks)**

### **Question 2 (20 MARKS)**

- a) Name and briefly explain any **three** types of software application attacks and **three** types of web application attacks that you know of. **(12 marks)**
- a) As a web application developer, for **any four** of the above attacks, explain the countermeasures you will take to prevent against the attacks. **(8 marks)**

### **Question 3 (20 MARKS)**

- a) AAA is a framework for intelligently controlling access to computer resources and enforcing policies. Describe the components and functionality of the AAA framework. **(9 marks)**
- b) Describe the term defense in depth and how it is useful to application security. **(5 marks)**
- c) Describe the term DoS and DDos in relation to web application security. **(3 marks)**
- d) Describe any two countermeasures you will design to prevent your web application against DoS and DDos. **(3 marks)**

### **Question 4 (20 MARKS)**

- a) Insecure software and has a huge impact on our financial, healthcare, defense, energy, and other critical infrastructure. Briefly highlight any such **five** impacts. **(5 marks)**
- b) Explain the following security countermeasures when it comes to web security:

SSL  
TLS  
SSH  
HTTPS  
Digital Certificates  
2FA

**(12 marks)**

- c) Explain the importance of using DMZ in securing your web server? (3 marks)

**Question 5 (20 MARKS)**

- a) Explain what a web application firewall (WAF) is how it is expected to perform. (5 marks)
- b) What is the difference between blocklist and allow list WAFs? (4 marks)
- c) Explain the concept of hardening the host and two advantages of doing it. (4 marks)
- d) Explain any one type of TLS attack. (3 marks)
- e) Explain what online privacy means, how it two ways on can be maintained. (4 marks)