



**UNIVERSITY EXAMINATIONS**  
**EXAMINATION FOR MAY/AUGUST 2022/2023 FOR DIPLOMA IN CYBER**  
**SECURITY**

**COURSE CODE: RES 021**

**COURSE TITLE: INTRODUCTION  
TO INFORMATION SECURITY**

**DATE: AUGUST, 2023**

**TIME: 2 HOURS**

**GENERAL INSTRUCTIONS:**

Students are NOT permitted to write on the examination paper during examination period. This is a closed book examination. Text book/Reference books/notes are not permitted.

**SPECIAL INSTRUCTIONS:**

This examination paper consists Questions in Section A followed by section B.

Answer **Question 1 and any Other Two** questions.

QUESTIONS in ALL Sections should be answered in answer booklet(s).

1. **PLEASE start the answer to EACH question on a NEW PAGE.**
2. **Keep your phone(s) switched off at the front of the examination room.**
3. **Keep ALL bags and caps at the front of the examination room and DO NOT refer to ANY unauthorized material before or during the course of the examination.**
4. **ALWAYS show your working.**
5. **Marks indicated in parenthesis i.e. ( ) will be awarded for clear and logical answers.**
6. **Write your REGISTRATION No. clearly on the answer booklet(s).**
7. **For the Questions, write the number of the question on the answer booklet(s) in the order you answered them.**
8. **DO NOT use your PHONE as a CALCULATOR.**
9. **YOU are ONLY ALLOWED to leave the exam room 30minutes to the end of the Exam.**
10. **DO NOT write on the QUESTION PAPER. Use the back of your BOOKLET for any calculations or rough work.**

## SECTION A(30 Marks)

### QUESTION ONE(COMPULSORY)

- a) Define the following terms as used in information security **(5 Marks)**
- i) DOS
  - ii) Attack
  - iii) Zero Day attack
  - iv) Vulnerability
  - v) Threat
- b) Define the term information security and briefly describe common malicious attacks **(5 Marks)**
- c) Discuss how social engineering is propagated in organizations and explain how the organizations can effectively educate their employees about social engineering techniques and promote a culture of security awareness to mitigate the risk of social engineering attacks **(5 Marks)**
- d) Explain the concept of a security policy and discuss its significance in establishing a strong security posture within an organization. **(5 Marks)**
- e) Outline **THREE** key functions performed by an operating system in managing computer resources and facilitating user interactions. **(6 Marks)**
- f) Enumerate the most prevalent types of malicious codes or malware commonly utilized by hackers in compromising computer systems, along with a brief description of each type and their potential impact on security. **(4 Marks)**

## SECTION B (ANSWER ANY TWO QUESTIONS)

### QUESTION TWO (20 Marks)

- a) Define the term hacking as used in information security **(2 Marks)**
- b) John, a regular online user, often spends time browsing the internet, using social media platforms, and making online purchases. He enjoys the convenience and connectivity that the online world offers. However, he may encounter various online threats during his activities. As an online user like John, discuss any three most common types of online threats that he should be aware of and take precautions against to protect his personal information and digital security **(9 Marks)**

- c) As an information security officer focused on preserving the CIA triad, explain how you would you define and uphold the fundamental principles of confidentiality, integrity, and availability in information security **(9 Marks)**

**QUESTION THREE (20 Marks)**

- a) Define a security policy and provide an explanation of **THREE** specific objectives that a well-designed security policy should aim to achieve in order to effectively safeguard an organization's information assets and ensure a secure environment. **(8 Marks)**
- b) Illustrate, with the help of a diagram, the mapping between the TCP/IP protocol suite and the ISO-OSI reference model, highlighting the corresponding layers and their functionalities **(6 Marks)**
- c) Outline the various forms or methodologies of penetration testing and briefly explain their purposes and objectives in evaluating the security of an organization's systems and infrastructure. **(6 Marks)**

**QUESTION FOUR (20 Marks)**

- a) Define the term packet encapsulation **(2 Marks)**
- b) Explain the **FOUR** key components involved in data communication and their respective roles. **(8 Marks)**
- c) In the context of networking, provide a description of several network devices commonly used to establish and maintain communication between devices and networks **(10 Marks)**

**QUESTION FIVE (20 Marks)**

- a) Define the term data communications and explain how it facilitate the transfer of information between systems **(4 Marks)**
- b) Describe four different types of networks commonly used in data communications, highlighting their characteristics and use cases. **(8 Marks)**
- c) Discuss the various transmission modes utilized in data communications and explain their advantages and limitations in transmitting data. **(8 Marks)**