University of Ruhuna- Faculty of Technology
Bachelor of Information Communication Technology Honours Degree
Level 2 (Semester II) Examination, November 2023
Academic year 2021/2022

Course Unit: ICT 3243 - Network, Computer and Application Security (Written)
Duration: 2 hours
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IMPORTANT INSTRUCTIONS
– This is a Closed Book examination.
– The medium of this examination is English.
– All four (04) questions are given equal marks.
– Answer all four (04) questions.

1)

a) Contrast Information Security , Computer Security and Cyber Security.[18 marks]

b) Explain the "AAA" concept with suitable examples. [24 marks]

c) SL-Flix (Pvt.) limited is the Netflix service offered to the Sri-Lankan region. As the Security Intern Officer you are required to produce a summary report on the three (03) possible virus categories that can be affected the system and suggest at least five (05) preventive actions. [40 marks]

d) Briefly explain the three (03) categories of authentication factors with relevant examples. [18 marks]

2)

a) Consider the following scenario.

Assume that you are the Chief Intellectual Property Protection Officer of Sri Lankan government. As your job role you support and advise the general public to protect their Intellectual Properties.

Mr. Athapaththu is a Software Engineer in Java programming language. He has developed a computer program which is able to summarize any Sinhala Law documents to simple Sinhala language. He wanted to obtain a "patent" for his invention.

    i) Define the term "Intellectual Property"? [10 marks]

    ii) Provide justification for whether Mr. Athapaththu can obtain a patent for his computer program. [15 marks]

iii) Briefly explain to Mr. Athapaththu a possible way of protecting his Intellectual Property. [15 marks]

b) Assume that you are the developer of the Faculty website. You have instructed to develop the website while preventing Cross-site scripting attacks. As a developer state four (04) approaches that you can take. [16 marks]

c) Briefly explain three (03) types of vulnerability scanners. [24 marks]

d) State and briefly explain the five (05) steps of vulnerability testing. [20 marks]

3)

a) You have been appointed as the Chief Security Officer of the Kensington Palace in London. On the 25th death Anniversary of Diana, Princess of Wales, an encrypted note of a diary was revealed to the general public. Following is the encrypted message by Caesar Cipher.

"FUDVK FDU"

It was discovered that the encrypted form of the letter "D" is letter "G".

i) Produce a definition for Caesar Cipher. [05 marks]

ii) State the key of the above encryption. [05 marks]

iii) Determine the original message. [50 marks]

b) State the seven (07) layers of the OSI model. [14 marks]

c) What is meant by Web Application Firewall? [10 marks]

d) State four (04) TCP/IP security issues. [16 marks]

4)

a) You are the network administrator for a small company, and you need to set up network security measures to control access to specific resources. The company has three departments: Marketing, Finance, and IT. Each department has particular file servers and databases that contain sensitive information.

Access Control Requirements:

- Members of the Marketing department should have read and write access to the marketing file server and read-only access to the marketing database.
- Members of the Finance department should have read and write access to the finance file server and full access to the finance database.
- Members of the IT department should have full access to both the IT file server and the IT database.

Prepare the access control matrix. [36 marks]

b) Discuss particular how user awareness and training contribute to increase the overall security level of an organization. Your discussion should cover at least two (02) ways of contributions. [20 marks]

c) Differentiate the "Black Hat Hackers" and "White Hat Hackers". [14 marks]

d) Develop an outline of IT security policy for the Faculty of Technology. Your outline should contain at least five (05) policy categories and one (01) guideline per each. [30 marks]

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