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27.05.2023(E)✓

SOMAIYA VIDYAVIHAR UNIVERSITY

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| Semester: January 2023 –May 2023 | | |
| Maximum Marks: 100 Examination: ESE Examination | | Duration:3 Hrs. |
| Programme code:0 / Programme: B Tech Computer Engineering | Class: TY | Semester: VI (SVU 2020) |
| Name of the Constituent College: K. J. Somaiya College of Engineering | Name of the department: Computer | |
| Course Code: 116U01C602 | Name of the Course: Information Security | |
| Instructions: 1)Draw neat diagrams 2) All questions are compulsory 3) Assume suitable data wherever necessary | | |

| Que. No. | Question | Max. Marks |
|---|---|---|
| Q1 | Solve any **Four** | 20 |
| i) | Assume a hacker hacks into a network, copies a few files, defaces the Web page, and steals credit card numbers, how many different threat categories does this attack fall into? | 5 |
| ii) | List the different layers of an organization where security must be implemented to protect its operations? | 5 |
| iii) | How does HTTPS provide security in comparison with http protocol? Which all fields are get authenticated and encrypted in case of https protected messages? | 5 |
| iv) | What is the difference between link and end-to-end encryption? | 5 |
| v) | What's the difference between a legal issue and an ethical issue? | 5 |
| vi) | Is it possible to use the DES algorithm to generate message authentication code? Justify. | 5 |

| Que. No. | Question | Max. Marks |
|---|---|---|
| Q 2 B | Solve any **One** | 10 |
| i) | Given p=19, q=23, and e=3 Use RSA algorithm to find n, $\phi(n)$ and d. | 10 |
| ii) | Define buffer overflows attacks. Give an example. What are its security implications? | 10 |

| Que. No. | Question | Max. Marks |
|---|---|---|
| Q3 | Solve any **Two** | 20 |
| i) | A news headline reads "The website of a company A is hacked and their homepage was replaced with an obscene message". What really happened and how can it be avoided? | 10 |
| ii) | Discuss the methodologies used for web application hacking? | 10 |
| iii) | Write the steps to read Email Headers and identify them as SPAM. | 10 |

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| Q 2 A | Solve the following | 05 |
| i) | Compare and contrast AES and DES algorithm. | 05 |
| ii) | List best practices to stay safe from man-in-middle attack | |
| | OR | |
| Q.2 A | Write short note on OWASP. | 10 |

| Que. No. | Question | Max. Marks |
|---|---|---|
| Q4 | Solve any **Two** | 20 |
| i) | What is a firewall? List the type of firewalls categorized by processing mode. Draw a schematic diagram of a packet filtering router used as a firewall and explain its function using a sample firewall rule. | 10 |
| ii) | How does PGP provide authentication and confidentiality for email services and for file transfer applications? Draw the block diagram and explain the components. | 10 |
| iii) | What are the important ethical issues in cybersecurity? Explain in detail. | 10 |

| Que. No. | Question | Max. Marks |
|---|---|---|
| Q5 | (Write notes / Short question type) on any **four** | 20 |
| i) | What requirements must a public key cryptosystem to fulfill to a secured algorithm? | 5 |
| ii) | Differentiate between trojan horse and denial-of-service attacks. | 5 |
| iii) | How web security can be achieved? What are the different mechanisms? | 5 |
| iv) | If I'm on my laptop, here inside my company, and I have just plugged in my network cable. How many packets must leave my NIC in order to complete a traceroute to twitter.com? | 5 |
| v) | Explain laws and ethics in Information Security. | 5 |
| vi) | Explain how the DES algorithm can be strengthened by 3 DES. What is the effective key length of 3 DES? Justify. | 5 |