

CBCS SCHEME

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18SFC22

Second Semester M.Tech. Degree Examination, June/July 2019 Operating System Security

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain in detail how Lampson's access matrix is used to represent protection states and protection system resource. (10 Marks)
- b. Explain multics security fundamentals. (05 Marks)
- c. Write a note on threat model. (05 Marks)

OR

- 2 a. Define secure operating system. Explain the three constraints of secured operating system. (10 Marks)
- b. Write a note on trust model. (05 Marks)
- c. Explain Lamson's access model in detail. (05 Marks)

Module-2

- 3 a. Describe Multics reference monitor. Explain the modules associated with it in detail. (08 Marks)
- b. Write a short note on history of Multics. (06 Marks)
- c. Discuss multics security fundamentals. (06 Marks)

OR

- 4 a. Explain:
 - i) Multics Segment Addressing
 - ii) Multics structure of segment descriptor(10 Marks)
- b. Explain the basic principles of multics operating system. (05 Marks)
- c. Write a note on Multics vulnerability analysis. (05 Marks)

Module-3

- 5 a. List two types of information flow secrecy models. Explain each of them in detail. (08 Marks)
- b. What are the challenges of trusted process? (06 Marks)
- c. Explain Windows Protection System. (06 Marks)

OR

- 6 a. Explain Information flow integrity model. (08 Marks)
- b. List and explain UNIX vulnerabilities. (06 Marks)
- c. Write a note on Bell-Lapadula model. (06 Marks)

Module-4

- 7 a. Explain briefly security Kernel with SCOMP architecture and illustrate with diagrams. (10 Marks)
- b. Briefly explain Domain and Type enforcement. (05 Marks)
- c. Write a note on SKIP Libraries. (05 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

OR

- 8 a. Explain with neat diagram GEMINI Secure Operating System. (10 Marks)
b. Explain retrofitting of Commercial Operating System in UNIX Era. (05 Marks)
c. Briefly explain the history of Security Kernel. (05 Marks)

Module-5

- 9 a. Describe Role Based Access Control (RBAC). Explain relation between different RBAC elements in detail. (10 Marks)
b. Write a note on Solaris compatibility. (05 Marks)
c. Write a note on SELINUX reference monitor. (05 Marks)

OR

- 10 a. Describe Linux Security Models (LSM) along with its implementation. (10 Marks)
b. Describe SELINUX protection state, labeling state and transition state. (10 Marks)

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