CBCS SCHEME

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16/17SCS11

First Semester M.Tech. Degree Examination, Dec.2017/Jan.2018
Advances in Operating Systems

Time: 3 hrs. Max. Marks: 80

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

Module-1

1 a. Define the operating system. What are the objectives and functions of O.S? Explain with help of diagrams. **(08 Marks)**

b. With the help of five state process model explain the various stages of a process. Also explain the types of events that lead to each state transition for a process. **(08 Marks)**

OR

2 a. What are the various threats, that has to be taken care at the time of designing the O.S? Also explain the counter measures. **(08 Marks)**

b. Explain the concept of file as resource. Explain all file related system calls in Unix. **(08 Marks)**

Module-2

3 a. What is a thread? Distinguish between processes and threads. Explain the two broad categories of thread implementation. **(08 Marks)**

b. Explain Window 2000 thread and SMP management. **(08 Marks)**

OR

4 a. A process contains 8 virtual pages on disk and is assigned a fixed allocation of four page frames in main memory. The following page trace occurs:
1, 0, 2, 2, 1, 7, 6, 7, 0, 1, 2, 0, 3, 0, 4, 5, 1, 5, 2, 4, 5, 6, 7, 6, 7, 2, 4, 2, 7, 3, 3, 2, 3.
Show the successive pages residing in the four frames using the LRU replacement policy. Compute the hit ratio in main memory. Assume the frames are initially empty. **(08 Marks)**

b. Explain lazy buddy algorithm with appropriate example. **(08 Marks)**

Module-3

5 a. List and briefly define five different categories of synchronization granularity. **(08 Marks)**

b. Discuss some of the reasons for implementing process migration. **(08 Marks)**

OR

6 a. Define the various techniques for thread scheduling. **(08 Marks)**

b. Define two types of distributed dead-locks. **(08 Marks)**

Module-4

7 a. With the help of a neat diagram explain the possible organization of an embedded system. Also explain the characteristics and design requirements for embedded operating system. **(08 Marks)**

b. What is eCOS? Explain the various eCOS components with the help of layered structure architecture. **(08 Marks)**

OR

8 a. Define the following terms :
(i) Tiny OS components
(ii) Threats
(iii) Intruder classes
(iv) Hackers **(08 Marks)**

b. Explain the key categories of malicious software. **(08 Marks)**

Module-5

9 a. With a neat diagram explain the process and resource management organization in LINUX. **(08 Marks)**

b. Explain four mechanisms used by Linux kernel to perform the interprocess communication. **(08 Marks)**

OR

10 a. Write a short note on the module management in Linux **(08 Marks)**

b. With a neat diagram explain Windows NT/2000 organization. **(08 Marks)**

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