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## First Semester M.Tech. Degree Examination, Dec.2019/Jan.2020 Advances in Operating Systems

Time: 3 hrs.

Max. Marks: 100

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

### Module-1

- 1 a. Discuss the areas in which operating system provides services. (06 Marks)  
b. Differentiate between simple batch processing and multiprogrammed batch processing. (06 Marks)  
c. Explain Linux operating system Kernel components. (08 Marks)

OR

- 2 a. What is a Process? Mention the reasons operating system is responsible for creation of new processes. (05 Marks)  
b. Describe five state process model with neat diagram, also explain the type of events that leads to state transition. (08 Marks)  
c. Explain two general categories of system access threats in operating system and their countermeasures. (07 Marks)

### Module-2

- 3 a. Explain user level thread management with its advantages and disadvantages. (08 Marks)  
b. Explain benefits of Microkernel organization. (06 Marks)  
c. With a neat thread transition diagram, explain the thread management in windows operating systems. (06 Marks)

OR

- 4 a. Explain with example differences between Fixed allocation, Local scope, Variable allocation global scope and Variable allocation local scope. (08 Marks)  
b. With a neat diagram, explain address translation in a segmentation system. (06 Marks)  
c. Explain virtual memory addressing in Linux memory management. (06 Marks)

### Module-3

- 5 a. Explain the key design issues of multiprocessor operating system. (06 Marks)  
b. List and briefly define five different categories of synchronization granularity. (06 Marks)  
c. Explain popular classes of real time scheduling algorithm. (08 Marks)

OR

- 6 a. Compare Linux and windows scheduling. (08 Marks)  
b. Explain some of the reasons for process migration implementation. (06 Marks)  
c. Explain distributed deadlocks in message communication. (06 Marks)

### Module-4

- 7 a. Explain the characteristics of Embedded Operating System. (06 Marks)  
b. Explain in detail Tiny OS components. (06 Marks)  
c. What is eCOS? Explain the various eCOS components with the help of layered structure architecture. (08 Marks)

OR

- 8 a. Define a Computer Virus. List its parts. Explain different phases that a typical virus goes through during its life cycle. (08 Marks)
- b. What is a Bot? List the uses of bots. (06 Marks)
- c. Discuss the following terms: i) Backdoors ii) Trojan Horse. (06 Marks)

**Module-5**

- 9 a. List the steps performed during the creation of a new process by the fork ( ) system call in Linux. (08 Marks)
- b. Explain the four different mechanisms by which user process can perform IPC using the Kernel. (08 Marks)
- c. Write a short note on Module management in Linux. (04 Marks)

OR

- 10 a. With a neat diagram, explain the windows NT executive process and thread manager. (10 Marks)
- b. With a neat diagram describe the steps followed by a cache manager of windows NT executive in cached read operation. (10 Marks)

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