Code No: **R42045** **R10** **Set No. 1**

IV B.Tech II Semester Regular/Supplementary Examinations, April - 2015

OPERATING SYSTEMS

(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

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1 Describe the three techniques of I/O communications. [15]

2 a) What is Process? Describe the process control with example. [8]

b) What is thread? Describe User level and kernel level threads. [7]

3 a) Define competing processes and cooperative processes? List the differences between them. [5]

b) What is a Monitor? Describe the structure of the Monitor. [10]

4 a) Describe the Deadlock avoidance algorithm. [5]

b) What is Dining Philosophers problem? Give the solution using semaphores. [10]

5 Describe the Optimal, Least recently used(LRU), First-in-first-out, and clock page replacements with three page frames for the following page trace:

2 3 2 1 5 2 4 5 3 2 5 2 [15]

6 a) Explain three types of processor scheduling. [8]

b) Compare characteristics of various scheduling algorithms. [7]

7 a) Describe different record blocking methods. [8]

b) Describe issues involved in file allocation. [7]

8 a) Describe Intrusion detection techniques. [7]

b) What is trusted system? Explain typical steps in reference monitor system. [8]

Code No: **R42045** **R10** **Set No. 2**

IV B.Tech II Semester Regular/Supplementary Examinations, April - 2015

OPERATING SYSTEMS

(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

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1 a) Describe Top-Level view of computer components with block diagram. [8]

b) Describe operating systems Objectives and Functions. [7]

2 a) Explain process state transition diagram with single and double suspended states. [8]

b) Explain the general structure of operating system control tables with diagram. [7]

3 a) What is Semaphore and Binary semaphore? Define their primitives. [7]

b) What is bounded buffer problem? Give the solution using semaphores. [8]

4 a) Describe how the Banker algorithm can avoid the deadlock. [7]

b) Consider a system with a total of 150 units of memory, allocated to three processes as shown [8]

Process	Max	Hold
1	70	45
2	60	40
3	60	15

5 Describe the following memory requirements

i) Relocation ii) Protection iii) Sharing

iv) Logical organization iv) Physical organization [15]

6 Explain the following CPU scheduling algorithms with suitable Example.

a) FCFS b) Round Robin

c) Shortest Process Next d) Shortest Remaining Time [15]

7 a) Define the following terms

i) Field ii) Record

iii) File iv) Database [8]

b) Describe the file system architecture with diagram. [7]

8 a) Who is an Intruder? Describe profile of behavior of intruders and Authorized users. [7]

b) Describe the taxonomy of malicious programs. [8]

Code No: **R42045** **R10** **Set No. 3**

IV B.Tech II Semester Regular/Supplementary Examinations, April - 2015

OPERATING SYSTEMS

(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

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1 a) What is Cache memory? Describe key elements of cache design. [8]

b) A computer has a cache, main memory, and a disk used for virtual memory .If a referenced word is in the cache, 20ns are required to access it. If it is in main memory but not in cache, 60 ns are needed to into the cache (this includes the time to originally check the cache), and then reference is started again. If the word is not in main memory, 12 ms are required to fetch the word from disk, followed by 60 ns to copy it to the cache, and then the reference is started again. The cache hit ratio is 0.9 and the main memory hit ratio is 0.6.What is the average time in ns required to access a referenced word on this system [7]

2 a) Explain Five state process model with diagram. [8]

b) Describe the reasons for creating a process and terminating a process. [7]

3 a) What is Mutual Exclusion? What are its requirements? [5]

b) Describe software approaches for Mutual Exclusion. [10]

4 a) Describe the deadlock detection algorithm. [7]

b) Apply the deadlock detection algorithm to the following data and show the results

Available=(2 1 0 0)

$$\text{Request} = \begin{pmatrix} 2 & 0 & 0 & 1 \\ 1 & 0 & 1 & 0 \\ 2 & 1 & 0 & 0 \end{pmatrix}, \quad \text{Allocation} = \begin{pmatrix} 0 & 0 & 1 & 0 \\ 2 & 0 & 0 & 1 \\ 0 & 1 & 2 & 0 \end{pmatrix}$$ [8]

5 Describe different memory management techniques. [15]

6 a) Describe a model of I/O organization. [8]

b) Define various Disk performance Parameters. [7]

7 a) Describe the objectives of a File management system and minimal user requirements. [7]

b) What is a directory? Describe tree structured directory. [8]

8 a) Describe different security threats. [7]

b) What is access matrix? Explain. [8]

Code No: **R42045** **R10** **Set No. 4**

IV B.Tech II Semester Regular/Supplementary Examinations, April - 2015

OPERATING SYSTEMS

(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks

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1	a)	What is an Interrupt? Explain the Instruction cycle with example.	[8]
	b)	Describe the Memory hierarchy.	[7]
2	a)	What is process? Explain the two state transition diagram.	[4]
	b)	Describe the process control block information.	[7]
	c)	List the key benefits of threads.	[4]
3	a)	What is concurrency? Describe the arise of concurrency contexts.	[5]
	b)	Define the Readers-writers problem? Give the solution to it using semaphores.	[10]
4	a)	Describe the necessary conditions to exist deadlock in a system.	[5]
	b)	Describe deadlock prevention techniques.	[10]
5	a)	What is virtual memory? Explain address translation in a paging system.	[8]
	b)	Describe operating system Fetch policy for Virtual memory.	[7]
6		Explain different disk scheduling algorithms with suitable examples.	[15]
7		What is a File organization? Describe different File organizations.	[15]
8	a)	Define three classes of intruders.	[7]
	b)	Describe Unix password scheme.	[8]