Total No. of Questions : 12]

SEAT No. :

P2746

[Total No. of Pages : 2

B.E. Computer Engineering
OPERATING SYSTEMS
(2003 Pattern)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates :

1) ***Answers to the two sections should be written in separate answer books.***
2) ***Answer Q1or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10, Q11 or Q12***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right side indicate full marks.***
5) ***Use of calculator is allowed.***
6) ***Assume suitable data if necessary.***

SECTION - I

Q1) a) What is process synchronization? Write solution for Producer – Consumer Problem using semaphores. **[10]**

b) What is critical section problem in uniprocessor operating system? Explain how the synchronization is handled at hardware level. **[8]**

OR

Q2) a) What is Readers – Writers problem? Write the solution of this problem using semaphores. **[10]**

b) What is monitor construct? Write solution to the dining philosopher problem using monitor. **[8]**

Q3) a) Explain Banker's algorithm with example. **[8]**

b) Explain public key and private key cryptography. **[8]**

OR

Q4) a) Explain with example the use of resource allocation graph in deadlock detection. Can it always detect the deadlock? **[8]**

b) Explain the various approaches for intrusion detection. **[8]**

Q5) a) Draw and explain the block diagram of UNIX system kernel. **[8]**

b) Explain the algorithm for buffer allocation. **[8]**

OR

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Q6) a) Explain the services provided by UNIX Operating System. **[8]**

b) Write the UNIX shell commands with its syntax and example for the following: **[8]**

i) File Creation.

ii) Changing file permission.

iii) Displaying file attributes.

iv) Creating and removing directory.

SECTION - II

Q7) a) Define inode. Explain fields of inode and how the direct and indirect blocks of the fileare stored in inode. **[10]**

b) Write an algorithm for reading a file using read system call. **[8]**

OR

Q8) a) Explain various types of the files in UNIX. **[6]**

b) Write an algorithm for opening the file using open system call. **[6]**

c) Explain the following system calls with example (i) chmod (ii) mount (iii) link **[6]**

Q9) a) Draw process state transition diagram in UNIX in detail. **[8]**

b) Define signals? How signals are handled by kernel? **[8]**

OR

Q10) a) Explain in detail how the process switching is handled by the kernel. **[8]**

b) Write an algorithm to create a child process using fork system call. **[8]**

Q11) a) Explain how demand paging is handled by UNIX kernel. **[8]**

b) Write an algorithm for opening a device in UNIX. **[8]**

OR

Q12) a) Explain how page faults are handled in UNIX kernel.. **[8]**

b) Explain terminal driver in canonical and raw mode. **[8]**