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[3764]-412

B.E. (Computer Engg.)

OPERATING SYSTEMS

(410442) (2003 Course)

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

Instructions to the candidates:

1) *Answers to the two sections should be written in separate books.*
2) *Neat diagrams must be drawn wherever necessary.*
3) *Figures to the right indicate full marks.*
4) *Assume suitable data, if necessary.*

SECTION - I

Q1) a) Explain in brief different types of semaphores. Discuss Reader / Writer problem using semaphore. **[10]**

b) Discuss the Hardware approach to achieve mutual exclusion. **[6]**

OR

Q2) a) Explain the structure of monitor. Discuss Producer / Consumer problem using monitor. **[10]**

b) Explain in brief the following terms: **[6]**

i) Busy waiting.

ii) Critical Region.

Q3) a) Explain the following: **[8]**

i) Necessary conditions for deadlock.

ii) Methods of deadlock recovery.

b) State and explain different methods for user authentication and security. **[8]**

OR

Q4) a) Explain Banker's algorithm with example. **[8]**

b) Compare various access matrix schemes of implementation and revocation with respect to each other. **[8]**

P.T.O.

Q5) a) Explain with neat diagram scenarios for retrieval of a buffer. **[10]**

b) Explain the file subsystem and data structures used in it. **[8]**

OR

Q6) a) Explain the three layer architecture of Unix kernel in detail with neat diagram. **[10]**

b) Explain the structure of buffer header. **[4]**

c) Explain the advantages and disadvantages of buffer cache. **[4]**

SECTION - II

Q7) a) Discuss the algorithm for allocation of disk block with example. **[8]**

b) Explain the different types of pipes in detail. **[10]**

OR

Q8) a) Explain following system call in brief: **[8]**

i) chown
ii) chmod
iii) stat
iv) fstat

b) What is inode? Explain in detail disk inode and incore inode. **[10]**

Q9) a) What is context of a process? Explain with neat diagram components of context of a process. **[10]**

b) Explain the process creation using fork system call. **[6]**

OR

*Q10)*a) Explain the following concepts: **[8]**

i) U area
ii) signals

b) Explain process scheduling in Unix with example. **[8]**

*Q11)*a) Explain various data structures used in demand paging. **[8]**

b) Explain in detail driver entry points and role of device switch table for accessing the device. **[8]**

OR

*Q12)*a) Write a note on following : **[8]**

i) Handling of Page fault.
ii) Allocation of swap space.

b) Write a note on disk Driver. **[8]**

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