Total No of Questions: [12] *SEAT NO. :*

[Total No. of Pages : 02]

[4366]- 301

SYMCA (Engg. Faculty)

Operating System

(Semester - III) (2008 Pattern) (610901)

Time: 3 Hours] May - 2013 *[Max. Marks : 70*

Instructions to the candidates:

1) *Answers to the two sections should be written in separate answer books.*
2) *Neat diagrams must be drawn wherever necessary.*
3) *Black figures to the right side indicate full marks.*

SECTION I

Q1) a) What are the fundamentals of language processing activities? [5]
b) Differentiate between lexical analysis and syntax analysis. [4]
c) What is a single pass assembler? [3]

OR

Q2) a) Explain fundamentals of language processing with necessary diagrams. [5]
b) Describe the design of a Two Pass Assembler. [4]
c) Compare Application Software and System Software. [3]

Q3) a) Explain the phases of a compiler. [6]
b) Explain an absolute loader with its advantages and disadvantages. [5]

OR

Q4) a) Explain the Macro definition and call with a suitable example. [6]
b) Discuss the loader schemes. [5]

Q5) a) Explain any 4 functions of an operating system in detail. [7]
b) What is process? What is process control block (PCB)? Explain in detail [5]

OR

Q6) a) Consider the following set of processes, with the length of the CPU burst given in milliseconds. [6]

Process	Burst Time	Priority
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5 all at

time 0.

i) Draw Gantt charts that illustrate the execution of these processes using the following scheduling algorithms: SJF, non-preemtive priority (a smaller priority number implies a higher priority), and RR (quantum = 1).

ii) Calculate the turnaround time of each process for each of the scheduling algorithms in part a?

b) What are the different types of schedulers? Explain with suitable diagram. [6]

SECTION II

Q7) a) Consider page referencing string given as 1, 2, 3, 4, 1, 2, 5, 1, 2, 3, 4, 5. Number of page frames are three. Show the page trace & calculate no of page faults for the following page reference schemes [8]
i) LRU
ii) Optimal Page Replacement.

b) Differentiate between Internal and External Fragmentation [4]

OR

Q8) a) Explain the concept of segmentation? What is paged segmentation? What are different types of segment? [8]

b) What is Swapping? Explain how the space is allocated using swapping? [4]

Q9) a) Explain Acyclic-Graph Directory structure? [4]

b) Differentiate between Linked Allocation & Index allocation of disk space. [8]

OR

Q10) a) Consider a disk system with 100 cylinders. The request to access the cylinders occurs in the sequence: 44, 20, 95, 4, 50, 52, 47, 61, 87, 25. Assuming that head is at cylinder 50, what is the total distance the disk arm moves to satisfy all the pending requests for the following disk scheduling algorithms: [7]
i) FCFS
ii) SSTF
iii) SCAN

b) Describe the structure of disk. [5]

Q11) a) List process management system calls & explain any two? [6]

b) Explain linking process in execution of user programs in Linux. [5]

OR

Q12) a) What are the components of Linux operating system? Explain. [5]

b) What are the 2 major functionalities of Linux Kernel? [6]