

2008-09

Time : 3 hours

Full Marks : 80

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

*Answer from **both** the Groups as directed.*

Group – A
(Compulsory)

Answer **all** questions : $2 \times 10 = 20$

1. Select the correct option from the following :
 - (a) The first fit, best-fit and the worst-fit can be user for :
 - (i) Contiguous allocation of memory
 - (ii) Linked allocation of memory
 - (iii) Indexed allocation of memory
 - (iv) All of these

- (b) Consider a set of 3 processes whose CPU time needed are given :

Process	CPU time
P1	10
P2	5
P3	3

If the CPU scheduling policy is FCFS, the average waiting time will be :

- (i) 5
 - (ii) 18
 - (iii) 8
 - (iv) 15
- (c) In which one of the following page replacement policies, Belady's anomaly may occur ?
- (i) FIFO
 - (ii) Optimal
 - (iii) LRU
 - (iv) MRU

(d) The simplest directory structure is :

- (i) Single level directory
- (ii) Two level directory
- (iii) Tree structure directory
- (iv) None of these

(e) A file is :

- (i) Logical storage unit
- (ii) An abstract data type
- (iii) File is usually non-volatile
- (iv) All of the above

(f) Thrashing :

- (i) Reduces page I/O
- (ii) Decreases the degree of multi-programming
- (iii) Implies excessive page I/O
- (iv) Improves the system performance

(g) A process is another name for :

- (i) A job
- (ii) A task
- (iii) Paging
- (iv) The OS dispatcher

- (h) With RR CPU scheduling in a time shared system :
- (i) Using very large time slices, it perform likes FCFS algorithm
 - (ii) Using very extremely small time slices, improves performance
 - (iii) Using large time slices, it perform likes LIFO algorithm
 - (iv) Using very large time slices, it perform likes SJF algorithm
- (i) Fixed Partitions :
- (i) Are very common incurrent OS
 - (ii) Are very efficient in memory utilization
 - (iii) Are very inefficient in memory utilization
 - (iv) Are most used on large mainframe OS
- (j) Concurrent process are :
- (i) Process that overlap in time
 - (ii) Process that do not overlap in time
 - (iii) Process that are executed by the processor at the same time
 - (iv) None of the above .

Group – B

Answer any four questions.

2. What is scheduler ? Describe the short-term, medium term and long term scheduler. 15
3. What is process ? What is process state ? Explain with diagram. 15
4. What is deadlock ? What are the necessary conditions for deadlock ? 15
5. What is fragmentation ? Explain and differentiate between internal and external fragmentation. 15
6. What is paging ? What is demand paging ? What is page fault ? When does page fault occurs ? 15
7. Write the short notes on the following : 15
 - (a) Synchronization
 - (b) File organization
 - (c) Real time system
 - (d) Buffering and Spooling
8. What is a directory ? Describe its structure and also describe file allocation method. What is a

threat ? Describe various types of system or program threats and its preventive method. 15

9. Consider the following set of processes, with the length of the CPU given in ms : 15

Process	CPU time
P1	10
P2	1
P3	2
P4	1
P5	5

- (a) Calculate the waiting and turn around time using FCFS.
- (b) Calculate the waiting and turn around time using SJF.
- (c) Calculate the waiting and turn around time using RR when time slice 1 ms.
10. Differentiate between : 15
- (a) Segmentation and Paging
- (b) Scheduling and Scheduler
- (c) Multi Programming and Multi Tasking

