



DG-3770

Third Year B. C. A. (Sem. V) (CBCS) Examination
March/April - 2016
Operating System - II

Time : 3 Hours]

[Total Marks : 70

Instruction :

नीचे दृशावेव निशानीवाणी विगतो उत्तरवही पर अवश्य लपवी. Fillup strictly the details of signs on your answer book.	Seat No. :
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<input type="text" value="Third Year B. C. A. (Sem. V) (CBCS)"/>	<input type="text"/>
Name of the Subject :	<input type="text"/>
<input type="text" value="Operating System - II"/>	<input type="text"/>
Subject Code No. : <input type="text" value="3"/> <input type="text" value="7"/> <input type="text" value="7"/> <input type="text" value="0"/>	Section No. (1, 2,.....): <input type="text" value="Nil"/>
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Q-1 Answer in Short: (Any seven) 14

- Define fragmentation. What is difference between internal and external fragmentation?
- Define Scheduling. What is preemptive and non-preemptive scheduling?
- What is difference between logical and physical address space?
- What is Race condition? How race condition can be avoided?
- List out CPU scheduling criteria. Explain any two criteria.
- What is context switching?
- What is high paging activity during paging scheme?
- Explain starvation of process.

Q-2 Do as Directed (Any three) 18

- Explain the memory strategy where programs can be larger than physical memory in detail and how can it be implemented?
- Explain Paging scheme in detail.
- Define Process. Explain process state diagram and PCB in detail.
- Describe scheme for defining the logical structure of directory.

Q-3 Do as Directed[Any one] 10

- a. Consider the reference string given below:

8, 1, 2, 3, 1, 4, 1, 5, 3, 4, 1, 4, 3, 2, 3, 1, 2, 8, 1, 2

How many page faults will occur for the following replacement? Consider the memory is empty initially and having 3 frames. Give the comparison.

- Optimal page replacement algorithm
- LRU page replacement algorithm
- FIFO page replacement algorithm

- b. Consider the following set of process, with the length CPU-burst time given in milliseconds:

Process	Burst time	Priority
P1	4	1
P2	8	4
P3	6	2
P4	1	1
P5	4	3

The processes are assumed to have arrived in following order:

- P1,P2,P3,P4,P5 all at time 0
 - I. Draw Gantt charts to illustrate the execution of the process using:
 - FCFS scheduling
 - A non-preemptive priority
 - SJF scheduling
 - Round Robin scheduling (Quantum=1)
 - II. Calculate turnaround time and waiting time of each process in each scheduling algorithm.

Q-4 Write short notes: (Any three) 18

- a. Segmentation
- b. IPC
- c. Inverted page table
- d. Deadlock prevention

Q-5 Answer the following 10

- a. What is a semaphore? Also explain producer-consumer problem using semaphores. 5

OR

- a. Write about allocation scheme of disk space to a file. 5
- b. Define Deadlock. Explain Banker's algorithm to avoid deadlock. 5

OR

- b. Explain Peterson's algorithm for preserving mutual exclusion. 5