

**GANPAT UNIVERSITY**  
**B. TECH SEM - IV COMPUTER ENGINEERING/INFORMATION TECHNOLOGY**  
**REGULAR EXAMINATION APRIL - JUNE 2017**  
**2CE402/2IT402: OPERATING SYSTEM**

Time: 3 Hours

Total Marks: 60

Instruction:

1. Attempt all questions.
2. Figures to the right indicate full marks
3. Each section should be written in a separate answer book

**SECTION - I**

- Que. - 1 (A)** Answer the following. [4]  
1. Define: Seek Time  
2. What is virtual memory?  
3. Write advantages of dynamic loading?  
4. Why page size always in power of 2?  
**(B)** Explain process placement algorithm with suitable example. [3]  
**(C)** Define Page Fault and also write steps to handling page fault. [3]

**OR**

- Que. - 1 (A)** Compare the following : [4]  
1. Global page replacement Vs Local Page replacement.  
2. Paging Vs Segmentation.  
**(B)** Discuss Aging page replacement algorithm with suitable example. [3]  
**(C)** Consider three processes (P1, P2 and P3) running in system. Process P1 size is 38 pages, Process P2 size is 88 pages and Process P3 size is 107 pages. Split available 135 frames among these three processes using proportional Allocation scheme. [3]

- Que. - 2 (A)** What do you mean by thrashing? Discuss any one of the technique to prevent thrashing. [4]  
**(B)** Explain hierarchical page table structuring technique in details. [3]  
**(C)** Discuss File access method in brief. [3]

**OR**

- Que. - 2 (A)** Explain the attributes of file and discuss the operation perform on file. [4]  
**(B)** Discuss buddy system method for allocating space to kernel object. [3]  
**(C)** Explain contiguous and link allocation method in detail. [3]

- Que. - 3 (A)** Discuss internal and external fragmentation with suitable example. [4]  
**(B)** Explain paging with TLB in detail. [3]  
**(C)** Suppose that disk drive 200 cylinder (number 0 to 199). The drive current serve 100 and is moving in the direction of decreasing track number. The queue of request in order is 17,139, 102,186,157, 41, 10, 64, 120. Calculate total head movement using FCFS, SSTF disk scheduling algorithm. [3]

**[ P. T.O ]**

## SECTION - II

- Que. - 4 (A) What is semaphore? Write and explain implementation of readers-writers problem using semaphore. [6]
- (B) What is a process? Explain structure of process in memory. [4]

OR

- Que. - 4 (A) Write differences between user level threads and kernel level threads. Also discuss multithreading models. [6]
- (B) Explain "5 State" process state transition diagram with illustration. [4]
- Que. - 5 (A) Discuss the dining-philosophers problem and its solution? Write implementation of dining-philosophers problem using monitor. [6]
- (B) Explain a method for detection of deadlock for single instance resources? Also discuss the parameters required to select a victim to resolve a deadlock. [4]

OR

- Que. - 5 (A) What do you mean by deadlock avoidance? Explain the use of Banker's algorithm for deadlock avoidance with illustration. [6]
- (B) What kind of problems occurs when two or more processes willing to access shared resources concurrently? Explain this with suitable example. [4]
- Que. - 6 (A) What is process control block? Explain various entries of it. [4]
- (B) Give the features of real time operating system and time sharing operating system. [4]
- (C) Define following terms: [2]
1. Turnaround time
  2. Throughput

END OF PAPER