

Subject Code—954

**M.C.A. (First Year) EXAMINATION**

(5 Years Integrated Course)

MCA-105

OPERATING SYSTEM—I

*Time : 3 Hours*

*Maximum Marks : 100*

**Note :** Attempt any *Five* questions. All questions carry equal marks.

1. What are the functions of an operating system as a resource manager ? What resources are managed during multiprogramming, time sharing and distributed systems ?
2. What is the purpose of system calls ? Give a categorization of system calls and explain them briefly.

954 =  $\frac{1}{3}$

P.T.O.

954 =  $\frac{2}{3}$

- 3 (a) Explain the layered structure of operating system. Is the virtual machine system different from it ?  
(b) Are any aspects of parallel systems analogous to Real Time Systems ? Justify.
4. What criteria constitute a good scheduling algorithm ? Explain with the help of a suitable example of the following scheduling techniques :
  - (a) Priority scheduling
  - (b) Shortest job first
  - (c) Policy-Driven Scheduling
  - (d) Round Robin Scheduling.
5. When does a race condition occur ? How can it be avoided ?
6. Why is swapping required in memory management ? How is swapping done in first fit and best fit ? What are the advantages and disadvantages of buddy systems ?

7. What is the base idea behind Virtual Memory ? Describe some techniques used by virtual memory systems for memory management.
8. Distinguish between the following :
- (a) FIFO and LRU page replacement
  - (b) Relocation and Compaction
  - (c) Memory Management with bit maps and linked lists.