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Total No. of Pages: 02

Total No. of Questions: 07

**BCA (2011 & Onwards) (Sem. – 4)**

**OPERATING SYSTEMS**

**M Code: 10068**

**Subject Code: BSBC-403**

**Paper ID: [B0242]**

**Time: 3 Hrs.**

**Max. Marks: 60**

**INSTRUCTIONS TO CANDIDATES:**

1. **SECTION-A** is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. **SECTION-B** contains **SIX** questions carrying **TEN** marks each and students have to attempt any **FOUR** questions.

**SECTION A**

1. Briefly answer the following:
  - a) Differentiate between Multi-programming and multi-processing systems.
  - b) What do you mean by context switching?
  - c) Differentiate between preemptive and non - preemptive process scheduling.
  - d) Write short note on Threads.
  - e) Distinguish between logical address space and physical address space.
  - f) Briefly explain the inter-process communications.
  - g) Differentiate between internal and external fragmentation.
  - h) What are the various criteria for CPU scheduling?
  - i) What is virtual memory? What is its need?
  - j) Briefly discuss the hash table implementation of directory structure.

## SECTION B

10x4=40

2. What is an operating system? What is the need for an operating system? Discuss the major functions of an operating system with examples.
3. Using the given information about the processes, calculate Average Waiting Time and Average Turnaround Time of each process under following scheduling algorithms:
  - a) First Come First Served
  - b) Shortest Job First
  - c) Round Robin (With time slice of 4 units)

| Process | Burst | Priority | Arrival time |
|---------|-------|----------|--------------|
| P1      | 19    | 3        | 0            |
| P2      | 15    | 2        | 3            |
| P3      | 10    | 1        | 12           |
| P4      | 6     | 4        | 12           |
| P5      | 3     | 3        | 15           |

4. Define and distinguish between paging and segmentation methods of memory management giving suitable examples.
5. What do you mean by a file system? Discuss the various file access methods in detail.
6. Discuss the following disk scheduling algorithms in brief giving their advantages and disadvantages:
  - a) SSTF
  - b) C-SCAN
7. What are the various threats to security of a system? Elaborate in detail the different mechanisms of protection and security.