

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)**

CLASS: MCA
BRANCH: MCA

SEMESTER : II/BL
SESSION : SP/2014

SUBJECT: MCA2007 OPERATING SYSTEM

TIME: 3 HOURS

FULL MARKS: 60

INSTRUCTIONS:

1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. Steam Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

- Q.1(a) What are the three main purpose of an operating system? [6]
- (b) Define the essential properties of the following types of operating system: [6]
- (i) Batch (ii) Interactive (iii) Distributed
- Q.2(a) Differentiate between preemptive and non-preemptive scheduling. State why strict non-preemptive scheduling is unlikely to be used in a computer center. [6]
- (b) Consider a system that supports the allocation strategies contiguous, linked and indexed. What criteria should be used in deciding which strategy should be utilized for a particular file? [6]
- Q.3(a) Given memory partitions of 100 KB, 500 KB, 200 KB, 300 KB and 600 KB (in order) how would each of the first-fit and worst-fit algorithms place processes of 212KB, 417KB, 112KB and 426KB (in order)? Which algorithm makes the most efficient use of the memory? [6]
- (b) Explain the difference between internal and external fragmentation. [6]
- Q.4(a) Explain the address translation mechanism in paging. Why is the page size normally some power of two? [6]
- (b) Differentiate between dynamic linking and dynamic loading. [6]
- Q.5(a) What is the cause of thrashing? How does the system detect thrashing and once detected what can the system do to eliminate it. [6]
- (b) Consider the following page reference string: [6]
- 1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6.
- How many page faults would occur from the following replacement algorithms, assuming 3 frames?
- (i) LRU (ii) FIFO (iii) Optimal
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- Q.6(a) What is a file? What are the different accessing methods of a file? [6]
- (b) Explain the schemes for defining the logical structure of a directory. [6]
- Q.7 Write short notes on: [3x4]
- (a) Virtual Memory
- (b) System call
- (c) Goals of security and protection