

**Question Paper Code : 71382**

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2015.

Fourth Semester

Computer Science and Engineering

CS 2254/ CS 45/ CS 1253/ 080250012/ 10144 CS 405 — OPERATING SYSTEMS

(Common to Information Technology)

(Regulation 2008 / 2010)

(Common to PTCS 2254/ 10144 CS 405 – Operating Systems for B.E. (Part-Time)  
Fourth Semester – CSE – Regulation 2009 / 2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List the main differences between operating systems for mainframe computers and PCs.
2. What are the five major activities of an operating system in regard to file management?
3. Define preemption and non-preemption.
4. Give the necessary conditions for deadlock to occur.
5. Assume a paging system with paged table stored in memory. If a memory reference takes 200 nanoseconds, how long does a paged memory reference take?
6. Define thrashing.
7. What is meant by mounting? Give its advantage.
8. How disk free space can be managed using bit vectors? Give an example.
9. State three advantages of placing functionality in a device controller, rather in the kernel.
10. Differentiate blocking I/O and unblocking I/O.

11. (a) (i) Explain the purpose and important examples. (8)  
(ii) Give a brief note on storage structure. (8)

Or

- (b) (i) What are the components of process control block? Explain. (8)  
(ii) Discuss the steps involved in process creation and process termination. (8)
12. (a) Consider the following set of processes, with the length of the CPU – burst time given in milliseconds. (16)

Process	Burst time
P1	10
P2	1
P3	2
P4	5

- (i) Draw Gantt's chart illustrating the execution of these processes using FCFS, SJF and Round Robin (with quantum = 1) scheduling techniques.
- (ii) Find the turn around time and waiting time of each process using the above techniques.
- Or
- (b) (i) Explain dining philosopher's synchronization problem and propose a solution for it. (8)  
(ii) Explain the techniques used to prevent deadlock. (8)
13. (a) Explain the concept of paging and the techniques for structuring page tables in detail with necessary diagrams. (16)

Or

- (b) Explain the different page replacement algorithms with neat examples. (16)
14. (a) (i) Explain file system along with its different components. (8)  
(ii) Discuss the commonly used operations on file with examples. (8)

Or

- (b) Explain the different file allocation methods with neat diagrams. Mention their advantages and disadvantages. (16)

Or

- (b) (i) Write a brief note on RAID systems. (8)
- (ii) Compare and contrast free space management and swap space management. (8)
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