

Question Paper Code : 60382

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Fourth Semester

Computer Science and Engineering

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

(Common to Information Technology)

(Regulations 2008/2010)

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

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define Operating System.
2. Define SYSTEM CALLS.
3. What do you mean by a critical section problem?
4. Describe the four necessary conditions for deadlocks.
5. Why should paging be used by operating systems?
6. Define virtual memory.
7. Mention the advantages and disadvantages of continuous allocation of files.
8. What do you mean by Remote File Access?
9. Define Stable Storage.
10. What do you mean by disk attachment?

PART B — (5 × 16 = 80 marks)

11. (a) (i) How does multi programming help in achieving improved utilization of a computer system? (8)
 (ii) With necessary diagram explain the term “process” from the operating system point of view. (8)

Or

- (b) (i) Briefly explain the four major functions of an operating system. (8)
 (ii) Give the main feature of the following types of OS outlining their limitations and Strengths: Interactive Time sharing OS, Real Time OS. (8)

12. (a) Consider the following set of processes, with the length of CPU-burst time given in millisecond. (16)

Process	Burst time	Priority
p1	10	3
p2	1	1
p3	2	3
p4	1	1
p5	5	2

The processes are assumed to have arrived in order p1, p2, p3, p4, p5 all at time 0.

- (i) Draw Gantt charts illustrating the execution of these processes using FCFS, SJF, a non-preemptive priority (a smaller priority number implies a higher priority) and RR (quantum = 1) scheduling.
 (ii) What is the turn around time of each process for each of the scheduling algorithms in part (i)?

Or

- (b) (i) Briefly explain methods of handling dead lock. (8)
 (ii) Define the requirement of the correct solution. How semaphores are used to solve dining philosophers problem? (8)

13. (a) An operating system contains three resource classes, namely R1, R2 and R3. The number of resource units in these classes is 7,7 and 10 respectively. The current resource allocation state is as shown below :

Process	Allocated resources			Maximum requirement		
	R1	R2	R3	R1	R2	R3
P1	2	2	3	3	6	8
P2	2	0	3	4	3	3
P3	1	2	4	3	4	4

- (i) Is the current allocation state safe? (4)
- (ii) Would the following requests be granted in the current state?
 - (1) Process P1 requests (1, 1, 0) (4)
 - (2) Process P3 requests (0, 1, 0) (4)
 - (3) Process P2 requests (0, 1, 0) (4)

Or

- (b) (i) Explain the concept of demand paging. (8)
 - (ii) How does the system detect trashing? Once it detects trashing what does the system do to eliminate this problem? (8)
14. (a) (i) Describe in detail about file system structure. (8)
- (ii) Explain Free Space Management. (8)

Or

- (b) Explain in detail the File system of Linux. (16)
15. (a) Describe in detail about RAID structure. (16)

Or

- (b) (i) Explain different disk scheduling Techniques. (8)
 - (ii) Explain in detail about applications of I/O interfaces. (8)
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