

B.TECH. DEGREE EXAMINATION, DECEMBER 2012**Fifth Semester**

Branch : Computer Science/Information Technology

IT 010 504, CS 010 505—OPERATING SYSTEMS (CS, IT)

(Regular—New Scheme)

Time : Three Hours

Maximum : 100 Marks

Part A*Answer all questions.**Each question carries 3 marks.*

1. Write notes on real time systems.
2. Draw the state transition diagram of pre-emptive process scheduling.
3. Write notes on race condition.
4. Explain about Belady's anomaly.
5. Explain about CSAN disk scheduling.

(5 × 3 = 15 marks)

Part B*Answer all questions.**Each question carries 5 marks.*

6. Explain about multiprogramming and time sharing operating system strategies.
7. What is critical section problem and what are the requirements of its solution ?
8. Differentiate between User Level threads and Kernal Level threads.
9. Write notes on external fragmentation and internal fragmentation.
10. Explain about tree structured directories.

(5 × 5 = 25 marks)

Part C*Answer either (a) or (b) from each question.**Each full question carries 12 marks.*

11. (a) Consider following set of processes, with length of CPU burst time given in milliseconds.

Process	Burst Time	Arrival Time
P1	2	4
P2	1	10
P3	2	15
P4	3	20
P5	8	28

Turn over

Calculate the following :—

- (i) Average wait time.
- (ii) Average turn around time.
- (iii) Total CPU and time.

Or

(b) Consider following set of processes, with length of CPU burst time given in milliseconds :

Process	Burst Time	Arrival Time
P1	4	0
P2	5	5
P3	2	7
P4	1	2
P5	3	4
P6	1	6
P7	2	3

Use pre-emptive and non-preemptive shortest job next scheduling to find :

- (i) Average turn around time.
- (ii) Average wait time.

12. (a) Explain about various approaches of Operating System strategies.

Or

(b) Explain about :

- (i) Microkernel.
- (ii) Virtual machines.

13. (a) Explain about bounded buffer producer consumer problem and its solution using semaphore.

Or

- (b) (i) What are necessary conditions for the occurrence of deadlock ? (4 marks)
- (ii) Explain about Banker's Algorithm. (8 marks)

14. (a) (i) What is paging ? Explain about the hardware support for paging with a neat diagram. (6 marks)

- (ii) Explain about any two methods for the implementation of page table. (6 marks)

Or

(b) (i) Explain about Least Recently Used (LRU) page replacement algorithm with an example. (6 marks)

- (ii) What is thrashing ? Why it happens ? (6 marks)

15. (a) (i) Explain about free disk space management. (8 marks)
- (ii) Explain about direct access method of file access. (4 marks)

Or

- (b) Explain about any three disk scheduling schemes with suitable example.

[5 × 12 = 60 marks]