

F 3171

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Reg. No.....

Name.....



## B.TECH. DEGREE EXAMINATION, NOVEMBER 2014

### Fifth Semester

Branch : Computer Science and Engineering

OPERATING SYSTEMS (R)

(Old Scheme – Prior to 2010 Admissions)

[Supplementary/Mercy Chance]

Time : Three Hours

Maximum : 100 Marks

### Part A

Answer **all** questions.

Each question carries 4 marks.

1. List five services provided by an operating system that are designed to make it more convenient for users to use the computer system.
2. What is the main advantage of the layered approach to system design? What are the disadvantages of using the layered approach?
3. Describe the differences among short-term, medium-term, and long term scheduling.
4. Explain the difference between pre-emptive and non-pre-emptive scheduling.
5. What are the three requirements that must satisfy by a solution to critical section problem?
6. What is a semaphore? What operations can be performed on a semaphore?
7. Compare logical and physical address space.
8. Explain the difference between external and internal fragmentation.
9. What are typical operations that may be performed on a directory?
10. Define seek time, rotational latency and bandwidth with respect to disk scheduling.

(10 × 4 = 40 marks)

### Part B

Answer **all** questions.

Each full question carries 12 marks.

11. (a) Discuss the evolution of Operating system.

Or

- (b) Explain in detail Windows 2000 architecture.

Turn over



12. (a) Explain the following CPU scheduling algorithm with example :

- (i) FCFS.
- (ii) SJF.
- (iii) Multilevel queues.
- (iv) Multilevel feedback queues.

Or

(b) Suppose a system uses priority scheduling (under the following processor load) where a small integer means a high priority :

| <i>Process</i> | <i>Burst time</i> | <i>Priority</i> |
|----------------|-------------------|-----------------|
| 0              | 80                | 3               |
| 1              | 20                | 1               |
| 2              | 10                | 4               |
| 3              | 20                | 5               |
| 4              | 50                | 2               |

- (i) Create a Gantt chart illustrating the execution of these processes.
- (ii) What is the turn around time for process  $P_2$  under priority scheduling?
- (iii) What is the average wait time for the processes?

13. (a) Explain the following classical IPC problems :

- (i) Producer-consumer problem.
- (ii) Dining philosophers problem.
- (iii) Readers writers problem

Or

- (b) (i) Explain how deadlock prevention can be done?
- (ii) Explain how wait-for graph is used for deadlock detection?

14. (a) (i) What is swapping? How does swapping optimize system performance?

- (ii) Given memory partitions of 100 K, 500 K, 300 K and 600 K (in order). How would each of the first fit, best fit, worst algorithms place processes of 212 K, 417 K, 112 K and 426 K (in order).

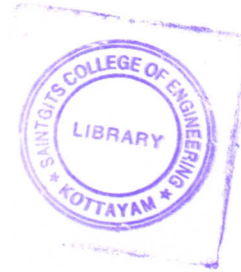
Or

- (b) (i) Explain the concept of demand paging.
- (ii) Consider a logical address space of 8 pages of 1024 words each, mapped onto a physical memory of 32 frames. How many bits are there in the logical address space? How many bits are there in the physical address space?

15. (a) (i) Explain about different file accessing methods.  
(ii) Explain about different directory structures.

*Or*

- (b) Explain about the following disk scheduling algorithms with suitable example :
- (i) SSTF.
  - (ii) C-Scan.
  - (iii) Look.



(5 × 12 = 60 marks)