



# INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

B.Tech IV Semester End Examinations (Regular), November – 2020

Regulation: IARE–R18

## OPERATING SYSTEMS

**Time: 2 Hours**

**(CSE | IT)**

**Max Marks: 70**

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**Answer any Four Questions from Part A**

**Answer any Five Questions from Part B**

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### PART – A

1. Discuss in details about the distributed system. [5M]
2. What is process and explain process states in details with diagram [5M]
3. What is paging? Discuss basic paging technique in details. [5M]
4. Explain in detail the various file access methods. [5M]
5. List the goal of protection and discuss about the domain of protection. [5M]
6. Describe system calls and its various types with an example for each. [5M]
7. What is segmentation? Explain the basic segmentation method. [5M]
8. Explain in detail about swap space management with example. [5M]

### PART – B

9. Give reasons why caches are useful. What problems do they solve and cause. If a cache can be made as large as the device for which it is cacheing why not make it that large and eliminate the device? [10M]
10. Discuss about the evolution of virtual machines. Also explain how virtualization could be implemented in operating systems. [10M]
11. What is semaphore? Discuss producer consumer problem with semaphore. [10M]
12. What are critical sections? Why mutual exclusion required? Explain any two methods of achieving mutual exclusion in detail. [10M]
13. Consider six memory partitions of size 200 KB, 400 KB, 600 KB, 500 KB, 300 KB and 250 KB. These partitions need to be allocated to four processes of sizes 357 KB, 210 KB, 468 KB and 491 KB in that order. Perform the allocation of processes using- First Fit Algorithm, Best Fit Algorithm. [10M]
14. Differentiate between internal and external fragmentation and which one occurs in paging scheme. [10M]
15. What is the maximum file size supported by a file system with 16 direct blocks, single, double, and triple indirection? The block size is 512 bytes. Disk block number can be stored in 4 bytes. [10M]
16. Bring out a detailed study on the various logical structures of a directory. [10M]
17. What is a deadlock characterization? Explain how resource allocation graph can be used to check for deadlock in a system. [10M]
18. Discuss about capability based system and language-based protection. [10M]