

III B. Tech I Semester Supplementary Examinations, May- 2018
OPERATING SYSTEMS

(Common to Computer Science Engineering and Information Technology)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
 2. Answering the question in **Part-A** is compulsory
 3. Answer any **THREE** Questions from **Part-B**
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PART -A

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|---|----|--------------------------------------------------------------------------------|------|
| 1 | a) | Differentiate between kernel mode and user mode. | [3M] |
| | b) | Define multi-threading? Explain its benefits. | [4M] |
| | c) | What is a critical section? Give examples. | [4M] |
| | d) | What do you mean by page fault? | [4M] |
| | e) | What are the necessary conditions for deadlock? | [4M] |
| | f) | Compare bit map based allocation of blocks on the disk with a free block list. | [3M] |

PART -B

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|---|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 2 | a) | Explain the purpose of system calls and discuss the system calls related to process control and communication in brief. | [8M] |
| | b) | Explain evolution of operating systems. | [8M] |
| 3 | a) | Describe the differences among long-term scheduling, short-term, and medium-term scheduling. | [8M] |
| | b) | What are the components of process control block? Explain. | [8M] |
| 4 | a) | Write Peterson Algorithm for 2-process synchronization to critical section problem and discuss briefly. | [8M] |
| | b) | What are the semaphores? How do they implement mutual exclusion? | [8M] |
| 5 | | Consider the following page reference string: 1, 2, 3, 4, 2, 1, 5, 6, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6. How many page faults would occur for the LRU, FIFO, LFU and optimal page replacement algorithms assuming two and five frames? | [16M] |
| 6 | a) | How can a system recover from a deadlock? Explain | [8M] |
| | b) | Explain the Resource-Allocation Graph Algorithm for deadlock prevention. | [8M] |
| 7 | a) | Explain the different file access methods in detail. | [8M] |
| | b) | Describe any two disk scheduling algorithms with suitable illustrations. | [8M] |
