

4. Solve any four sub-questions.
- o a) Explain context-switching with its advantages. 5
 - o b) Explain term authentication in detail. 5
 - o c) Discuss producer-consumer problem. 5
 - o d) Explain different types of Operating Systems. 5
 - o e) Explain any five system calls. 5
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Time : 3 Hours

Instructions :

1. All Questions are Compulsory.
2. Each Sub-question carry 5 marks.
3. Each Sub-question should be answered between 75 to 100 words. Write every questions answer on separate page.
4. Question paper of 80 Marks, it will be converted in to your programme structure marks.

1. Solve any **four** sub-questions.
 - a) Define operating system and list the basic services provided by operating system. 5
 - b) Explain batch system and Multiprogrammed System in detail. 5
 - c) Define process. Explain process states in details with diagram. 5
 - d) Explain the terms related to IPC :
 - i) Race condition
 - ii) Critical section
 - iii) Mutual exclusion
 - e) List the main any two difference and any three similarities between threads and process. 5
2. Solve any **four** sub-questions.
 - a) What are the memory management requirements? 5
 - b) What is paging? Discuss basic paging technique in details. 5
 - c) What is segmentation? Explain the basic segmentation method. 5
 - d) What are the conditions for deadlock? Explain deadlock detection and recovery in detail. 5
 - e) Explain deadlock prevention in detail. 5
3. Solve any **four** sub-questions.
 - a) Explain Protection and Security mechanism of the operating system. 5
 - b) Explain virtual memory management system. 5
 - c) Explain inter process Authentication. 5
 - d) Define DMA (Direct Memory Access) controller. Explain its working. 5
 - e) Discuss Process Control Block (PCB). 5