Reg. No. \_\_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **14CS2037** | **Duration :** | **3hrs** |
| **Sub. Name :** | **OPERATING SYSTEM** | **Max. Marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | List and explain various execution modes in the Operating System with neat diagram. | CO1 | 10 |
| b. | List the services provided by an Operating System and explain how each provides convenience to the users. | CO1 | 10 |
| **(OR)** | | | | |
| 2. | a. | What is the purpose of system calls? Categorize and explain its types. | CO1 | 15 |
| b. | List down some of the Windows and UNIX system calls with regard to file management. | CO1 | 5 |
|  |  |  |  |  |
| 3. | a. | Describe how the operating system supports the inter-process communication? What are the system calls that support inter- process communications? | CO1 | 15 |
| b. | Discuss the various multithreading models. | CO1 | 5 |
| **(OR)** | | | | |
| 4. |  | Consider the following set of processes with the arrival times and CPU burst time given in milliseconds.   |  |  |  | | --- | --- | --- | | Process | Arrival Time | Burst Time | | P1 | 0 | 15 | | P2 | 1 | 20 | | P3 | 2 | 8 | | P4 | 3 | 13 |   Calculate average turn around time and average waiting time using following algorithms.   1. FCFS 2. Pre-emptive shortest Job first. 3. Round Robin using Time slice=5 ms 4. Discuss the advantages of Round Robin Scheduling algorithm | CO2 | 20 |
|  |  |  |  |  |
| 5. | a. | Elaborate the following classic problems of synchronization.   1. Reader Writer 2. Producer Consumer 3. Dining Philosopher | CO3 | 15 |
| b. | Illustrate the significance of resource allocation graph. | CO3 | 5 |
| **(OR)** | | | | |
| 6. | a. | Paging is a memory management scheme. Draw the Paging hardware diagram. Write the working procedure of paging hardware in detail. | CO3 | 15 |
| b. | Discuss various deadlock recovery strategies. | CO3 | 5 |
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| 7. | a. | Identify the number of page faults and page replacements for the algorithms FIFO, Optimal replacement and LRU. Which of the above algorithms gives the minimum page fault? Assume that number of frames available is 3 and page request sequence is given below :  3 1 3 4 2 4 1 2 3 1 2 4 2 3 1 3 | CO2 | 15 |
| b. | Explain the demand paing concept with suitable diagram. | CO2 | 5 |
| **(OR)** | | | | |
| 8. | a. | Write short notes on attributes of file and file operations. | CO1 | 10 |
| b. | Explain any two directory implementation methods for file system. | CO3 | 10 |
|  | | **Compulsory**: |  |  |
| 9. |  | Consider a disk drive having 200 cylinders numbered from 0 to 199. The drive is currently serving a request at 100. Execute the following Pending Queue request = 23, 89, 132, 42, 187 with the following algorithms.   1. FCFS 2. SSTF 3. SCAN. 4. LOOK | CO2 | 20 |