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



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – April / May - 2017**

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| **Sub. 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. |  | Categorize and explain the different types of system calls. | CO1 | 20 |
| (OR) | | | | |
| 2. | a. | List five services provided by an operating system that are designed to make it more convenient for users to use the computer system. Explain. | CO1 | 10 |
|  | b. | Discuss the different kinds of operating system structure. | CO3 | 10 |
| 3. |  | Processes executing concurrently in the operating system require an Inter Process communication mechanism to exchange data and information. Summarize the various issues involved in implementing Inter Process communication. | CO1 | 20 |
| (OR) | | | | |
| 4. |  | Consider the following set of processes, with the length of the CPU- burst time given in milliseconds.   |  |  |  | | --- | --- | --- | | **Process** | **Burst Time** | **Priority** | | P1 | 10 | 3 | | P2 | 1 | 1 | | P3 | 2 | 3 | | P4 | 1 | 4 | | P5 | 5 | 2 |   The processes are assumed to have arrived in the order P1, P2, P3, P4, P5, all at time 0.   1. Draw 4 Gantt chart that illustrate the execution of these processes using FCFS, SJF, a non-preemptive priority (a smaller priority number implies a higher priority), and RR (quantum=1) scheduling. 2. Calculate the waiting time of each process for each of the scheduling algorithm in part a? 3. Which of the algorithms in part a results in the minimum average waitingtime? | CO2 | 20 |
| 5. |  | Elaborate on the various classic problems of synchronization. | CO3 | 20 |
| (OR) | | | | |
| 6. |  | Describe deadlock avoidance highlighting on safe state and Banker’s algorithm. | CO3 | 20 |
| 7. |  | Consider the following page reference string:  7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1  Calculate the page faults that would occur for the following page replacements algorithms, assuming an allocation of 3 frames.   1. LRU b.FIFO c.Optimal | CO2 | 20 |
| (OR) | | | | |
| 8. |  | Consider the following requests are in the disk queue:  98, 183, 37,122, 14, 124, 65, 67 (head starts at 53)  Analyze the procedure to provide services for above request sequence with the help of different disk scheduling algorithms. | CO2 | 20 |
|  | | **Compulsory:** |  |  |
| 9. |  | The file system provides the mechanism for online storage and gives access to both data and programs residing on the disk. Review the attributes, operations and types of files. | CO3 | 20 |

ALL THE BEST