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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| **Code :** | **14CS2050** | **Duration :** | **3hrs** |
| **Sub. Name :** | **UNIX ARCHITECTURE** | **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. | Explain the various subsystems of system kernel with neat block diagram. | CO1 | 10 |
| b. | Explain the decisions and loop control structure in shell programming.Write a shell script to print upto n rows in the format shown below using for loop                                1                          2         2                       3       3       3                 4       4        4       4 | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | Discuss the structure of buffer header and the scenarios of retrieving a buffer when the kernel cannot find the block on the hash queue. Provide relevant diagram and algorithm. | CO1 | 15 |
| b. | Elucidate the lifetime of a process with state transition diagram. | CO1 | 5 |
| 3. | a. | Discuss the system implementation of inode assignment to a new file. | CO1 | 10 |
| b. | A process wants to access byte offset 5,25,000 in a file, calculate the levels of indirection, block number and byte number and draw the block layout. (Asssume that a logical block on the file system holds 1k bytes and that block number is addressable by a 32 bit integer) | CO1 | 10 |
| (OR) | | | | |
| 4. | a. | Describe any 5 system calls related to accesing of files. Write a sample C/C++ program. | CO2 | 10 |
| b. | Consider the above process tree and indentify the type of pipe to be used between the processesA->B and A->C for interprocess communication and explain the necessary algorithm and system calls. | CO2 | 10 |
| 5. | a. | Describe the operations involved in allocating and attaching a region to a process. | CO2 | 10 |
| b. | Write the sequence of operations performed by the kernel during the implementation of fork system call with algorithm. | CO1 | 10 |
| (OR) | | | | |
| 6. | a. | Discuss the various events that makes a process to sleep and sketch the algorithm of sleep. | CO3 | 10 |
| b. | Sketch the image of executable file and explain invoking of other programs with an example program. | CO3 | 10 |
| 7. | a. | Suppose there are three processes A, B and C (process A is in group1and processes B and C are in group2). If the base level priority is 30 and the clock interrupts the process 60 times/sec, sketch the process schedule using fair share scheduling algorithm considering the time slice as 1 second. | CO2 | 15 |
| b. | Paraphrase the system calls related to time with a description. | CO3 | 5 |
| (OR) | | | | |
| 8. | a. | Define swapping. Write and explain the algorithm to allocate the map space. | CO3 | 15 |
|  | b. | Describe page stealer process with neat diagram. | CO2 | 5 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Create a shared memory of size 10kb and key ‘555’. Then demonstrate the Inter Process Communication between two processes with sample code snippets. | CO3 | 10 |
| b. | How can a process be debugged? Explain with example programs. | CO2 | 10 |

ALL THE BEST