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. | Sketch the block diagram of system kernel and explain the file subsystem and process control subsystem. | CO1 | 10 |
| b. | Write a shell script for the following problem: print “year end is far away” if today is between January and April, “year end is near” if between May and August “year end is coming” for the period September to December. | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | Explain the various scenarios for retrieval of a buffer. Write the algorithm. List the advantage and disadvantage of buffer cache.Support your explanation with suitable diagram. | CO1 | 20 |
| 3. | a. | Compare and contrast between disk inode and in-core inode. | CO1 | 5 |
| b. | Identify and discuss the algorithm to convert the given path name into inode.  Path name: */etc/passwd* | CO1 | 15 |
| (OR) | | | | |
| 4. | a. | Explain the algorithm to open a file and draw the data structures to depict their relationships when the two processes have the files open.  Process A  fdl = open ("/etc/passwd", O\_RDONLY);  fd2 = open ("local", O\_RDWR);  fd3 = open ("/etc/passwd", O\_WRONLY);  Process B  fdl = open ("/etc/passwd", O\_RDONLY);  fd2 = open ("private", O\_RDONLY); | CO2 | 10 |
| b. | Discuss the different types of pipes and illustrate how reading and writing happens. | CO2 | 10 |
| 5. | a. | Draw the process state transition diagram and explain the lifetime of a process.Indicate the situation in which each of these transistions happen. | CO1 | 10 |
|  | b. | Summarize how interrupts and exceptions are handled while saving the context of a process. | CO2 | 10 |
| (OR) | | | | |
| 6. | a. | Discriminate freeing a region and detaching a region with algorithms. | CO2 | 10 |
|  | b. | Explain how signals are recognized and handled with algorithm. | CO2 | 10 |
| 7. | a. | Consider three different processes A, B and C with initial priority for the processes is 60. The highest user-level priority is 60 and the clock interrupts the system 60 times a second. Compute the decay of the CPU usage and the processes priority between process A, B and C. | CO2 | 8 |
|  | b. | List the functions of a clock interrupt handler. Elaborate any 3 function along with the system calls and their data structures. | CO3 | 12 |
| (OR) | | | | |
| 8. | a. | Explain demand paging memory management with diagram. | CO3 | 15 |
|  | b. | Assume a swap map having 500 units with the address starting at 1. Draw the allocation and freeing of swap space for the following scenarios.  (i) Allocate 100 units (ii) Allocate 75 units (iii) Allocate 125 units (iv) Free 75 units (v) Free 100 units (vi) Allocate 200 units (vii) Free 200 units. | CO3 | 5 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Demonstrate the interprocess communication between two processes through sockets. List the socket system calls. | CO3 | 15 |
|  | b. | Explain process tracing and point out its drawbacks. | CO3 | 5 |

ALL THE BEST