**Karunya University**

**(Karunya Institute of Technology and Sciences)**

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

**Supplementary Examinations – June 2016**

**Subject Title: OPERATING SYSTEM Time : 3 hours**

**Subject Code: 14CS2037 Maximum Marks: 100**

**Answer ALL questions (5 x 20 = 100 Marks)**

1. a. Briefly explain various managements of the operating systems and their responsibilities in detail. (8)

b. Write short notes on Process control block. (12)

**(OR)**

2. a. Assume you have the following jobs to execute with one processor, with the jobs arriving in the order listed here: (10)

|  |  |
| --- | --- |
| **Process** | **Burst Time** |
| P1 | 80 |
| P2 | 20 |
| P3 | 10 |
| P4 | 20 |
| P5 | 50 |

i. Suppose a system uses FCFS Scheduling. Create a Gantt Chart illustrating the execution of these processes?

ii. What is the turnaround time for process p3?

iii. What is the average wait time for the processes?

b. Discuss the various methodologies used to logically implement Inter – Process Communication. (10)

3. Explain about the concepts of context Switching with necessary diagram.

**(OR)**

4. a. With neat diagram explain the classical problems of synchronization. (10)

b. Consider the following processes Snapshot at time *T*0:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Allocation | Max | Available |
|  | ABC | ABC | ABC |
| **P0** | 010 | 7 5 3 | 3 3 2 |
| **P1** | 2 0 0 | 3 2 2 |  |
| **P2** | 3 0 2 | 9 0 2 |  |
| **P3** | 2 1 1 | 2 2 2 |  |
| **P4** | 0 0 2 | 4 3 3 |  |

Check whether the above processes are safe or not. If safe display the safe sequence?

(10)

5. a. Discuss about the issues to be considered with multithreaded programs. (10)

b. How does deadlock avoidance differ from deadlock prevention? Write about deadlock avoidance algorithm in detail. (10)

**(OR)**

6. a. 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. How many page fault would occur for the following page replacement algorithms? Assume all the frames are initially empty. (15)

i. LRU Replacement

ii. FIFO Replacement

iii. Optimal Replacement

b. List out some of the file attributes. (5)

[P.T.O]

7. a. How Swap space is used? Where the swap Space is located in the disk and explain the concept of Redundant Array of inexpensive disks (RAID)? (10)

b. What is meant by Demand paging and explain the basic concepts and performance of demand paging? (10)

**(OR)**

8. a. Given the following queue: 95, 180, 34, 119, 11, 123, 62, 64 with the Read-write head initially at the track 50 and the tail track being at 199. Discuss the different algorithms. (10)

b. Describe the common schemes for defining the logical structure of a directory. (10)

**Compulsory:**

9. a. Explain free space management. (5)

b. Explain various file allocation techniques in detail with their relative advantages and disadvantages. (15)