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

**Karunya University**

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

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

**End Semester Examination – April/ May - 2015**

**Subject Title: ESSENTIALS OF COMPUTER SCIENCE Time : 3 hours**

**Subject Code: 14CA346 Maximum Marks: 100**

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

1. **Compulsory:**

a. What is IPC? Explain the different IPC mechanisms with necessary diagram. (15)

b. List the process management, memory management and storage management operations.

(5)

2. a. Discuss the classic synchronization problems and their solutions with examples. (12)

b. Illustrate the use of monitors in solving the critical section problems with an example.(8)

(OR)

3. a. What is the significance of semaphores? Explain the different types of semaphore. (10)

b. Consider the following set of jobs with their arrival times and their execution times. (10)

|  |  |  |
| --- | --- | --- |
| Process id | Arrival time(ms) | Execution time(ms) |
| 0 | 0 | 80 |
| 1 | 10 | 20 |
| 2 | 10 | 10 |
| 3 | 80 | 20 |

Evaluate the Round Robin Scheduling with quantum of 15 and answer the following questions.

i. 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?

4. a. Define double linked list. Explain the various operations of double linked list with necessary algorithms. (15)

b. Convert the following infix expression to postfix expression using stack. (5)

A + B \* C.

(OR)

5. a. Explain binary search algorithm with an example. (8)

b. Evaluate quick sort algorithm with following example. (12)

38 81 22 48 13 69 93 14 45 58 79 72

6. a. Discuss the functions of various layers of OSI model with suitable diagrams. (15)

b. Draw the architecture diagram of TCP/IP protocol suite. (5)

(OR)

7. a. Explain the following intra-domain routing protocols with necessary diagrams.

i. RIP (8)

ii. OSPF (8)

b. Describe any four ICMP error reporting messages. (4)

8. a. What are the drawbacks of electronic mail? Discuss MIME with its header format and data types with necessary diagram. (12)

b. Discuss the DNS messages with neat diagrams. (8)

(OR)

9. Explain FTP operation and packet formats with suitable diagrams.