EASTERN UNIVERSITY, SRI LANKA
EXTERNAL DEGREE EXAMINATION IN SCIENCE
SECOND YEAR, FIRST SEMESTER (August, 2015)
EXTCS 202- OPERATING SYSTEM
(.. ,.. ..ıd Repeat)

r all questions   Time: Two hours

Define the terms single user operating system and multi user operating system with example.
Draw the process state diagram.
Describe briefly the Context switching.
Describe briefly the process interrupting policies.
What are the types of process scheduling algorithms?

Define the following terms with regard to process scheduling.
  i. First Come First Serve Scheduling(FCFS)
  ii. Round Robin Scheduling

Consider the following set of process, with the arrival times and the length of the CPU- burst times given in milliseconds.

Process	Burst time	Arrival time
A	50	0
B	20	20
C	100	40
D	40	60

  i. Draw the Gantt chart of the following scheduling algorithms
       a. First Come First Serve(FCFS)
       b. Round Robin(using a time quantum of 20 milliseconds)
  ii. Calculate the waiting time and the turnaround time for each process using each of those scheduling in part (i). Also compute the average waiting time and the average turnaround time for each of those algorithms.
  iii. Identify the scheduling algorithm from part (i) that result in the minimal average waiting time.

Q3)
  a) State the conditions for a deadlock to occur.
  b) Write the principles to prevent the system from deadlock problem.
  c) Consider the snapshot of system operation described below:
     The system has three process namely P1, P2 & P3 and four resources namely
     R3 & R4.
       • P1 holds R2 and request R1.
       • P2 holds R1, R2 and request R3.
       • P3 holds R3.
  i. Draw the corresponding resource allocation graph.
  ii. State with reasons whether the system is in a deadlocked state or not.

Q4)
  a) Briefly explain the memory fragmentation.
  b) State the memory allocation methods.
  c) The following table shows the job details and the list of memory blocks of the
                Job List   Memory List

Job no	Memory requested
J1	15
J2	20
J3	10
J4	30

Memory Location	Block Size
100	30
200	15
300	50
400	20

  i. Use the first fit and best fit memory allocation policies to allocate the
      blocks to the jobs given and calculate the memory fragmentation.
  ii. Which is the most efficient allocation policy for particular problem given