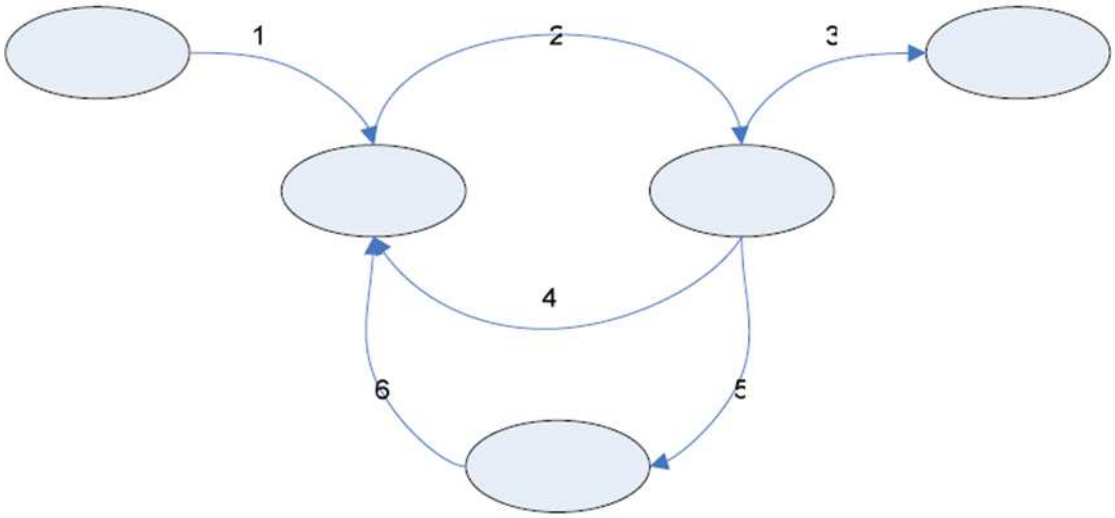
1. What is a process? What is needed by a process in order to carry out its function?

2. The next picture represents the different states of a process. Complete the table with the name of each state and explain the circumstances in order to go from one state to another. Each arrow points out the change between states.

1	It happens when . . . .
2	
3	
4	
5	
6	



3. The Round Robin algorithm is based on each process and is changed after running the CPU for a short time. This short period of time is called quantum. Think about the benefits and drawbacks of having too little quantum, or even the opposite. What about too much over an extended period of time?

4. Explain what the following concepts mean:

   - long–term scheduler.
   - Short term scheduler algorithms
   - Dispatcher
   - Context change

5. Giving the following processes, every process arrives at the same time. The first one being, P1, the second one P2, the third P3, P4 and P5:

Process	Time
P1	10
P2	1
P3	2
P4	1
P5	5

   (a) Draw the diagram using the following short-term algorithms: FCFS, SJF and Round Robin (quantum=1s).

   (b) Calculate the return time and the average time for each one.

   (c) Calculate the efficiency for each process and for each algorithm.

   (d) Calculate the waiting time for each process and each algorithm. b)

   (e) Conclusions

6. We have the segments in the table in a segmented management system. The format of it is (segment number, offset). In the table fill in the addresses with the following virtual addresses: (0, 430), (1, 10), (4, 112).

Segment number	Base	Size
0	219	600
1	2300	14
2	90	100
3	1327	580
4	1952	96

|

7. What is the reason, and what are the benefits that virtual memory has?

8. Answer whether the following are true or false:

   (a) Thanks to virtual memory, the programs are able to use more addresses than what the main memory offers.

   (b) Thanks to the virtual memory, the operating systems get to run concurrently. Therefore, resulting in a greater number of processes than that which is possible to load in main memory.

   (c) DMA is a kind of device to manage the main memory in order that CPU are free to run processes.

   (d) The way of organizing the files in the hard disk depends on the operating system.